ENGINEERING NEWS-RECORD

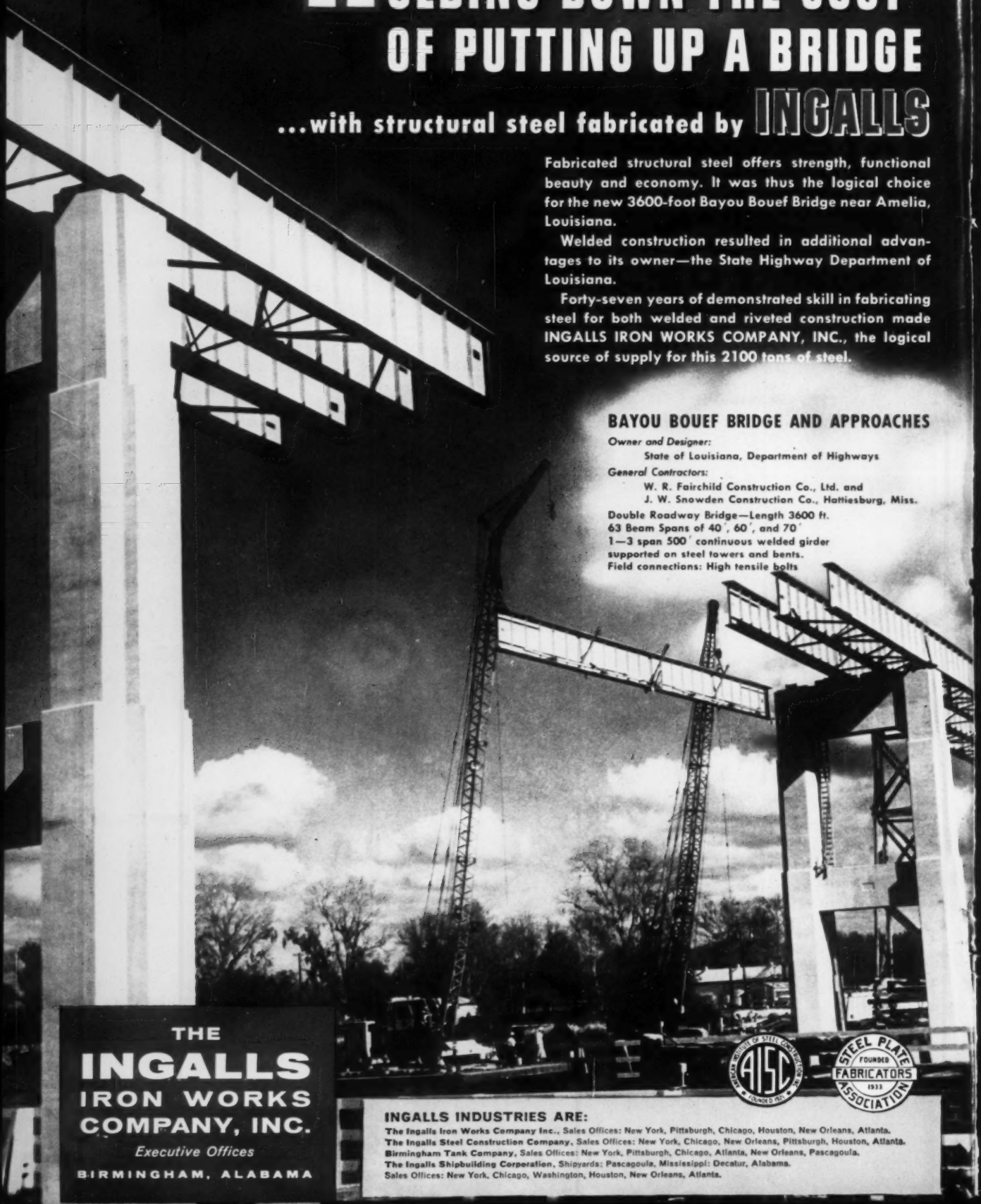
Cable-hung roof goes to the races p. 33

A McGRAW-HILL PUBLICATION

E B POWER GS N
UNIVERSITY MICROFILMS IN
313 N 1 ST
ANN ARBOR MICH

HOLDING DOWN THE COST OF PUTTING UP A BRIDGE

...with structural steel fabricated by INGALLS



Fabricated structural steel offers strength, functional beauty and economy. It was thus the logical choice for the new 3600-foot Bayou Bouef Bridge near Amelia, Louisiana.

Welded construction resulted in additional advantages to its owner—the State Highway Department of Louisiana.

Forty-seven years of demonstrated skill in fabricating steel for both welded and riveted construction made INGALLS IRON WORKS COMPANY, INC., the logical source of supply for this 2100 tons of steel.

BAYOU BOUEF BRIDGE AND APPROACHES

Owner and Designer:
State of Louisiana, Department of Highways

General Contractors:
W. R. Fairchild Construction Co., Ltd. and
J. W. Snowden Construction Co., Hattiesburg, Miss.

Double Roadway Bridge—Length 3600 ft.
63 Beam Spans of 40′, 60′, and 70′
1—3 span 500′ continuous welded girder
supported on steel towers and bents.
Field connections: High tensile bolts

THE INGALLS IRON WORKS COMPANY, INC.
Executive Offices
BIRMINGHAM, ALABAMA

AISC — American Institute of Steel Construction — Founded 1921

Steel Plate Fabricators Association — Founded 1933

INGALLS INDUSTRIES ARE:

The Ingalls Iron Works Company Inc., Sales Offices: New York, Pittsburgh, Chicago, Houston, New Orleans, Atlanta.
The Ingalls Steel Construction Company, Sales Offices: New York, Chicago, New Orleans, Pittsburgh, Houston, Atlanta.
Birmingham Tank Company, Sales Offices: New York, Pittsburgh, Chicago, Atlanta, New Orleans, Pascagoula.
The Ingalls Shipbuilding Corporation, Shipyards: Pascagoula, Mississippi: Decatur, Alabama.
Sales Offices: New York, Chicago, Washington, Houston, New Orleans, Atlanta.

"There is no finer engine than MURPHY DIESEL"

If you're looking for dependable power with maximum operating economy, it will pay you to profit by the experience of so many other pit and quarry operators who have found Murphy Diesel to be "the finest engine on the market."

Talk over your requirements for engines, power units or "packaged" generator sets with your Murphy Diesel Dealer. Ask him to show you how trouble-free Murphy Diesels can help you increase profits.

Sterling Sand and Gravel Co.

SPECIFICATION CONCRETE MATERIALS

ASPHALT PAVING

TELEPHONE HU 2-2693
1800 NORTH TAFT HILL ROAD
FORT COLLINS, COLO.

April 23, 1957

Murphy Diesel Company
5317 W. Burnham Street
Milwaukee 14, Wisconsin

Gentlemen:

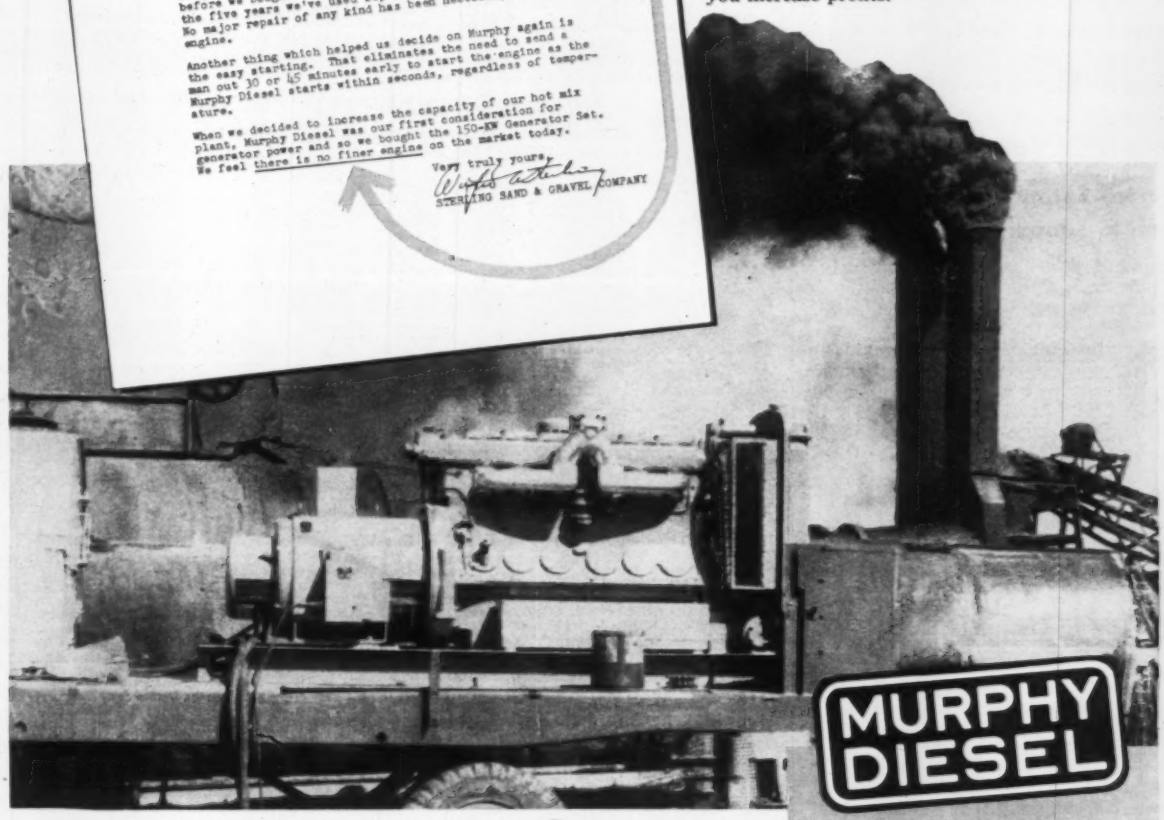
We have recently purchased one of your Model 12¼ 150 KW Generator Sets. From our previous experience with the economy and dependability of the Murphy Diesel Model 22-A we've been using for the past five years, we figured we couldn't find a better engine anyplace.

Our old Model 22-A, which is a 100-KW Generator Set, was purchased used in 1952. Hinman Bros. Construction Co., who originally purchased the set, had used it for three years before we bought it. It has given us excellent service in the five years we've used it, with very little maintenance. No major repair of any kind has been necessary on this engine.

Another thing which helped us decide on Murphy again is the easy starting. That eliminates the need to send a man out 30 or 45 minutes early to start the engine as the Murphy Diesel starts within seconds, regardless of temperature.

When we decided to increase the capacity of our hot mix plant, Murphy Diesel was our first consideration for generator power and so we bought the 150-KW Generator Set. We feel there is no finer engine on the market today.

Very truly yours,
STERLING SAND & GRAVEL COMPANY



MURPHY DIESEL

HEAVY-DUTY POWER for Construction

Murphy Diesel engines and power units are available in sizes from 96 to 264 H.P. with engine speeds of 1200 and 1400 rpm. "Packaged" generating units are available with capacities ranging from 64 to 165 K.W.

MURPHY DIESEL COMPANY

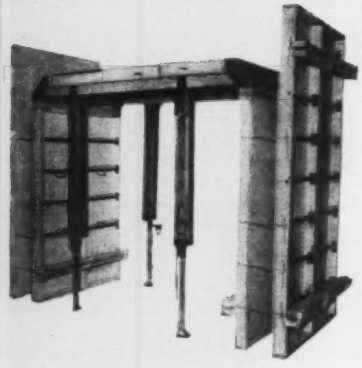
5321 W. Burnham St., Milwaukee, Wisconsin

SALES . . . PARTS . . . SERVICE

Throughout the Nation

378 N

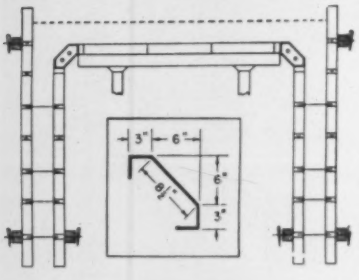
Culvert Forming



Symons Develops New Haunch Form for Culverts

Symons Safety Shores Used to Support Slab

Symons now has a new 9 x 9 inch steel haunch section designed to connect Symons standard wall panels and slab panels for the monolithic pouring of culverts. This new section provides for a 3-inch face on the roof slab and



on the wall with a 45-degree-angle surface 8½ inches wide between wall and roof. No built-up forms or other special equipment is necessary.

Made of 11-gauge hot rolled steel this new section is available in 4, 6, and 8 foot lengths. It can be used with either metal frame or wood frame forms. Symons regular form hardware is used for securing the steel section to Symons standard forms. No special fittings are required.

Symons forms, shores and column clamps may be rented with purchase option. FREE literature on Symons products is available upon request.

Symons

SYMONS CLAMP & MFG. CO.

4265 Diversey Avenue, Dept. J-8
Chicago 39, Illinois

ENGINEERING NEWS-RECORD

EIGHTY-FOURTH YEAR OF PUBLICATION

ABP ABC MEMBER

Editorial Offices, 330 W. 42nd St., New York 36, N. Y.
New York - LOngacre 4-3000; Chicago - MOhawk 4-5800; San Francisco - DOuglas 2-4600;
Washington - REpublic 7-6630

Editor, Waldo G. Bowman

Senior Staff Editor, Arthur J. Fox, Jr.
Managing Editor, Edward H. DeHart
Senior Editor, Frederick S. Merritt

Highways, Airports—Transportation
Edward M. Young, Jr.
Marc Leggiero

Buildings, Bridges—Structures
Frederick S. Merritt
Marianne Stern, David B. Hill

Rivers, Sanitation—Water Resources
James B. Sullivan
Joseph N. Todaro, John P. Mahoney

Finance, Labor—Management
Robert J. Stinson, Charles J. Harding, Stuart D. Boynton

Regional Editors
J. Roland Carr, *Chicago, 520 N. Michigan Ave.*
Lauress L. Wise, *San Francisco, 68 Post St.*

Copy—Production
Barbara Lamb
Evelyn Stepic
Shirley Russell
John C. Greenough

Presentation
Harry W. Jensen, Philip J. Horn, Jr.

Statistics, Prices, Costs—Business News
Elsie Eaves, *Manager*
Julia Mahoney, *Construction Reports*
Mildred Wetzel, Marian Sciorra
Diane Tartaglia, Marie Moravsik,
James Webber, Ruth Carlson, Economics
Marie Roessler, Evelyn Huber, *Statistics*
David Farquhar, Bertha Herrmann, *Prices, Unit Prices*

Editorial Research and Indexing
Helen Rich
Eva Gierat, Rene Hay, Patricia Witschger

Consulting Editors: Van Tuyl Boughton, *New York*
Nathan A. Bowers, *San Francisco*

Advertising Sales Manager: Donald S. Robertson

Circulation Manager: Edward F. Bessler

Washington Bureau, National Press Bldg., Washington 4, D. C., George B. Bryant, Jr., Chief, Alan E. Adams, Glen R. Bayless, Roy Calvin, Ernest Conine, John C. L. Donaldson, Jay Flocken, Boyd France, Anthony DeLeonardis, Arthur J. Kraft, Donald O. Loomis, Gladys Montgomery, Arthur L. Moore, Seth T. Payne, Dean Reed, Morton A. Relchek, Caroline W. Robertson, Vincent B. Smith.

Domestic News Bureaus: Atlanta—801 Rhodes-Haverty Bldg., Atlanta 3, Charles T. Dixon, Jr., Chief, Frances Ridgway; **Chicago**—520 North Michigan Ave., Chicago 11, Stewart W. Ramsey, Chief; **Cleveland**—55 Public Square, Cleveland 13, William G. Meldrum, Chief, Violet Bashian; **Dallas**—901 Vaughn Bldg., Dallas, Kemp Anderson Jr., Chief, Lorraine Smith; **Detroit**—856 Penobscot Bldg., Detroit 26, Donald MacDonald, Chief, Nancy Moore; **Los Angeles**—1125 West 6th St., Los Angeles 17, John Kearney, Chief, Michael Murphy, Jack Meyer, Marvin Petal; **San Francisco**—68 Post St., San Francisco 4, Margaret Ralston, Chief, Jenness Keene, Sue Johnson; **Seattle**—6040 Fifth Ave., N.E., Seattle, Ray Bloomberg.

Foreign News Bureaus: New York—John Wilhelm, Editor; **London**—Robert Gibson; **Paris**—Robert E. Farrell; **Mexico City**—Peter Weaver; **Bonn**—Morrie Helitzer; **Beirut**—O. M. Marashian; **Tokyo**—Sol Sanders; **Caracas**—John Pearson; **Moscow**—William T. Coughlin. Correspondents in 55 cities throughout the world.

Correspondents: In 79 principal cities in the U. S. and possessions and Canada.

McGraw-Hill Economics Department: Dexter M. Keezer, Director; W. H. Chartener.

Robert F. Boger, Publisher

ENGINEERING NEWS-RECORD, Vol. 161, No. 10, September 4, 1958

Published weekly by McGraw-Hill Publishing Company, James H. McGraw (1860-1948), Founder. Publication Office, 99-129 North Broadway, Albany 1, N. Y. See panel below for directions regarding subscriptions or change in address. **Executive, Editorial, Advertising and Circulation Offices, McGraw-Hill Building, 330 W. 42nd St., New York 36, N. Y.** Donald C. McGraw, President; Joseph A. Gerardi, Executive Vice President; L. Keith Goodrich, Vice President and Treasurer; John J. Cooke, Secretary; Nelson Bond, Executive Vice President, Publications Division; Ralph B. Smith, Vice President and Editorial Director; Joseph H. Allen, Vice President and Director of Advertising Sales; A. R. Venezian, Vice President and Circulation Coordinator. **Subscriptions are solicited only from persons with identifiable commercial or professional interests in construction and building. Position and company connection must be indicated on subscription orders.** United States subscription rate for individuals in the field of this publication $6.00 per year, single copies 50 cents; foreign $20.00 per year, payable in advance. Second-Class mail privileges authorized at Albany, New York. Printed in U. S. A. Title registered in U.S. Patent Office.

© Copyright 1958 McGraw-Hill Publishing Company, Inc. All Rights Reserved.

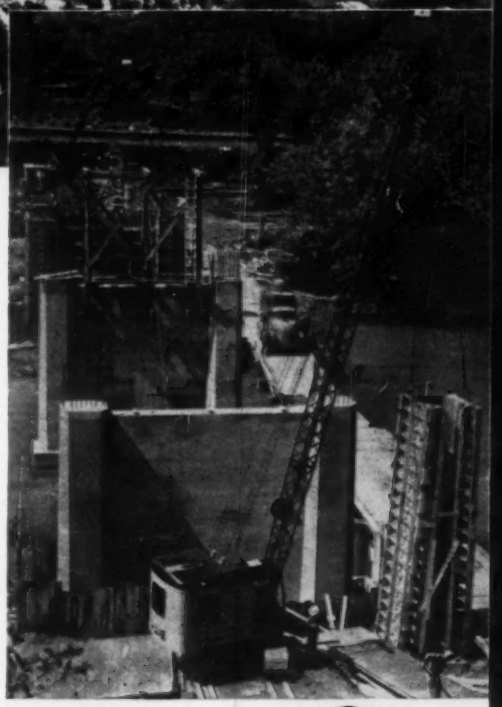
SUBSCRIPTIONS: Send subscription correspondence and change of address to Subscription Manager, ENGINEERING NEWS-RECORD, 330 W. 42nd St., New York 36, N. Y. Subscribers should notify publisher promptly of any change of address, giving old as well as new address, and including postal zone number, if any. If possible enclose an address label from a recent issue of the magazine. Please allow one month for change to become effective.

Postmaster: Please send Form 3579 to Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

A WORKHORSE RIG for WORKHORSE JOBS!

NORTHWEST

3/4 YD. MODEL 25



You don't have to take anybody's word—you don't have to believe the advertising on the Northwest Model 25's superiority. Go out and take a look at it in rock digging. Then compare it with *any other ¾ yd. rig on the market.*

It's the workhorse of the industry. These rigs load fast! Here is plenty of power combined with the Northwest Dual Independent Crowd that utilizes force other independent crowd shovels *waste.* No stutter—no restarts—no dipper juggling either in the bank or getting the load to the truck.

Compare it as a Pullshovel, Dragline or Crane. It's easy to convert. Booms are sturdier for workhorse digging and lifting. Swing Clutches are Uniform Pressure Clutches that eliminate the jerks and grabs that reduce output. The "Feather-Touch" Clutch Control gives ease of operation, without resorting to delicate mechanisms, valves, pumps and piping and at the same time retains the *feel of the load.*

There is a wide range of boom hoist equipment with which to meet your problem. There is flexibility in crawler dimensions. It is an answer to every problem where ¾ yd. capacity is the right size, and you have a full ¾ yd. machine that will handle work that smaller machines of the same rated capacity can't handle.

It's a workhorse!

NORTHWEST ENGINEERING COMPANY

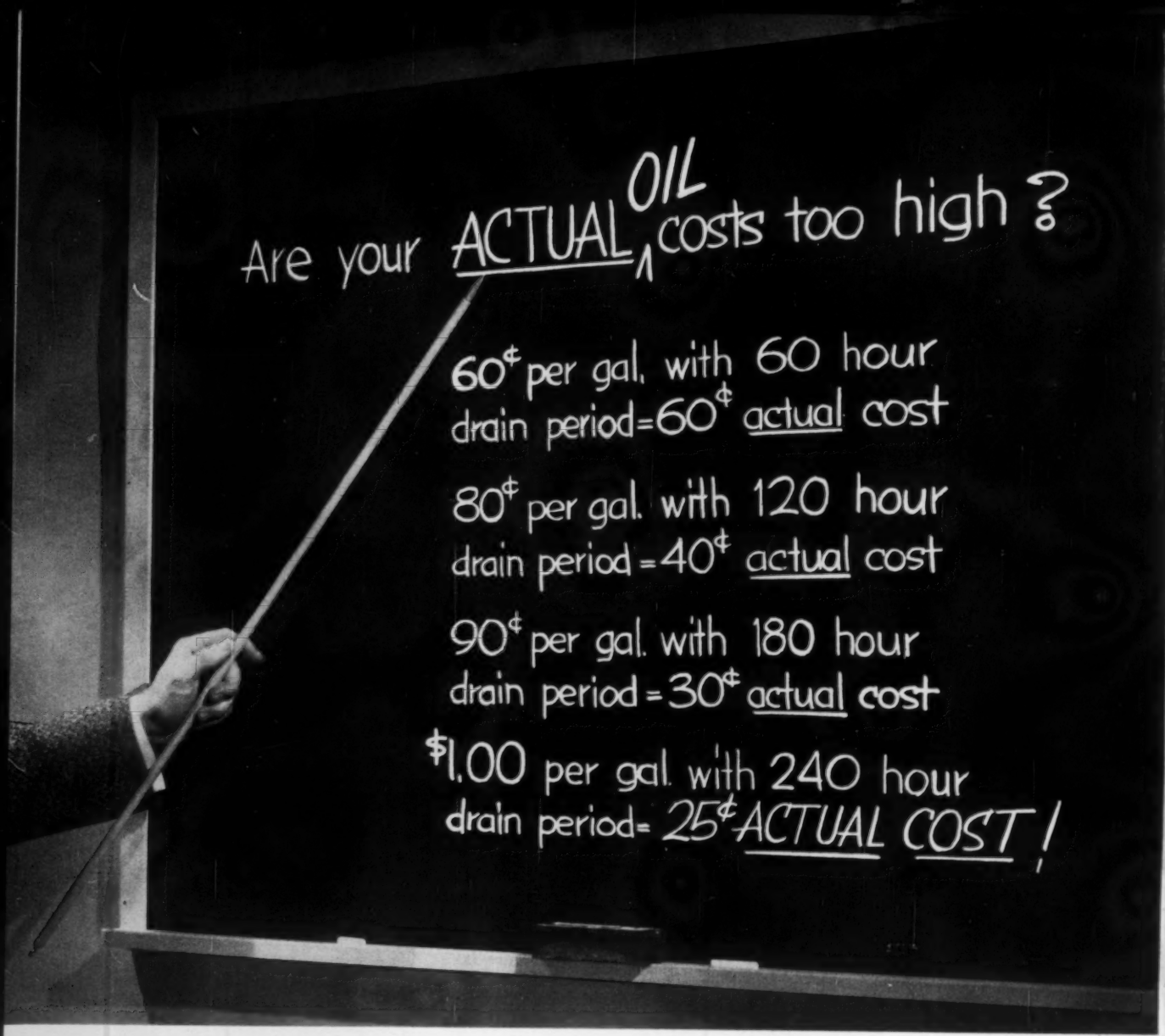
1502 Field Building, 135 South LaSalle Street, Chicago 3, Illinois

S25-11-2CG

NORTHWEST *Always Ready to* GO

NORTHWEST EQUIPMENT IS BUILT IN THE FOLLOWING SIZES

SHOVELS	CRANES	DRAGLINES	PULLSHOVELS	TRUCK CRANES
¾ Yd. to 2½ Yd. Capacity	13-Ton to 50-Ton Capacity	¾ Yd. to 3 Yd. Capacity	¾ Yd. to 2½ Yd. Capacity	25-Ton and 35-Ton Capacity


Are your ACTUAL OIL costs too high?
60¢ per gal. with 60 hour drain period=60¢ actual cost
80¢ per gal. with 120 hour drain period=40¢ actual cost
90¢ per gal. with 180 hour drain period=30¢ actual cost
$1.00 per gal. with 240 hour drain period= 25¢ ACTUAL COST!

Don't be misled by lube oil prices or wild claims about drain periods. Often a higher priced lube oil has the lowest *actual* cost. And three factors—all important—govern lube oil change periods: (1) engine and operating conditions; (2) fuel; and (3) oil quality. D-A laboratory technicians will analyze your used engine oil and your fuel . . . then recommend *maximum safe drain periods* for *your* engines. Your local D-A Representative will be glad to outline this free money-saving service to you. Perhaps you too can cut your *actual* oil cost as much as 50%.

Remember—you can have delivery of D-A lubricants any place in the United States within 24 hours. D-A offers this important service by maintaining more than 50 strategically located warehouses. And, no matter where you take delivery, each D-A lubricant meets the same rigid specifications in every respect . . . for all D-A lubricants are compounded to the same formulas from the same materials.

Lubricating heavy-duty equipment across the nation—since 1919

D-A LUBRICANT COMPANY, INC. • INDIANAPOLIS 23, INDIANA

Look for this nearby Goodyear dealer sign for better tire values—better tire care.

GOODYEAR TIRES

New SUPER HARD ROCK LUG

Tubeless or Tube-Type

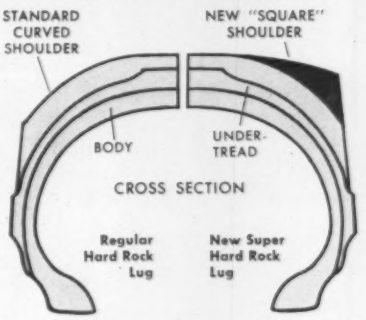
This new SUPER HARD ROCK LUG is *truly* wide-base, from tread–to shoulder–to bead!

BONUS RUBBER–and plenty of it–*right where you need it most.* Result? *Super* traction, *super* flotation, *super* stability–and *super* resistance to shoulder snags and cuts.

Best news of all: *SUPER HARD ROCK LUG costs no more than conventional wide-base off-roaders!* Get more tire for your money! Get this great new wide-base yardage champ at your Goodyear dealer's now.

Goodyear, Truck Tire Dept., Akron 16, Ohio.

SEE HOW DEEPER SHOULDER DEPTH PROVIDES STRONGER BITE, LONGER WEAR:



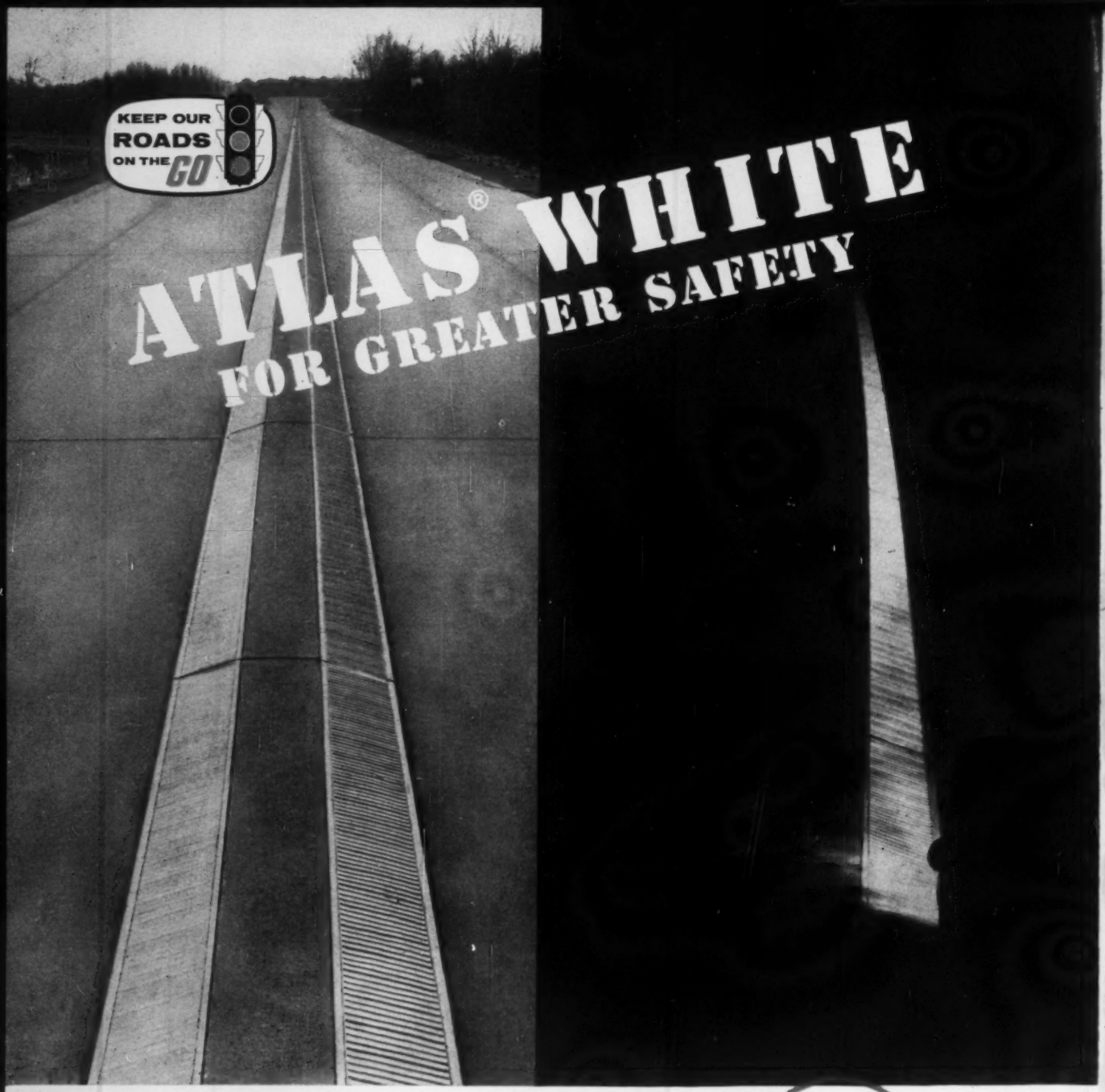
Built with **TRIPLE-TOUGH 3-T NYLON CORD!**

Like steel, tire cord must be tempered to be tough. Goodyear's exclusive 3-T process, involving Tension, Temperature and Time, triple-tempers cord to make it TRIPLE-TOUGH–to give you longest tire life, lowest cost-per-yard!

60 YEARS ANNIVERSARY

GOODYEAR

MORE TONS ARE HAULED ON GOODYEAR TRUCK TIRES THAN ON ANY OTHER KIND



- Reflecting concrete curbs made with ATLAS WHITE cement trace road's course well ahead of driver.
- In daylight, white curbing contrasts with highway pavement.
- At night, saw-toothed surfaces reflect headlight rays back to driver. On rainy nights, the wet curb surfaces become even more reflective.

For more information on ATLAS WHITE cement for highway construction, write: Universal Atlas, 100 Park Avenue, New York 17, N. Y.

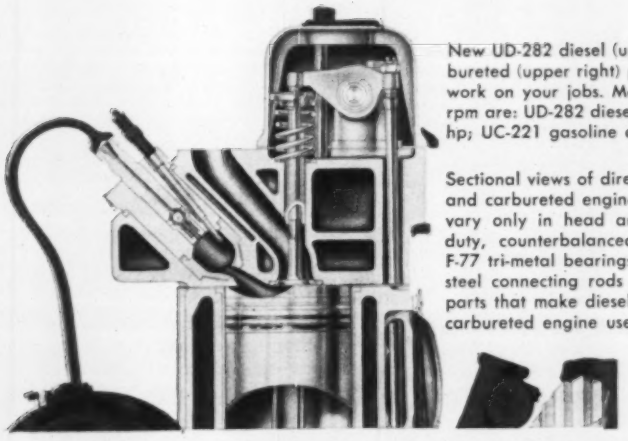
CB-86

UNIVERSAL ATLAS CEMENTS

USS

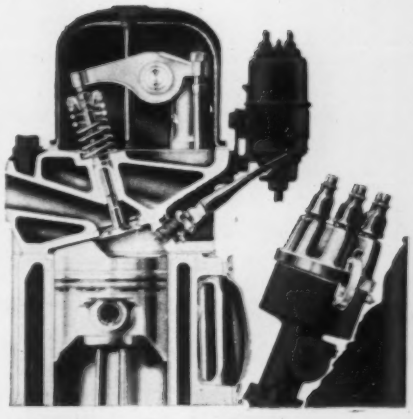
Universal Atlas Cement
Division of United States Steel

OFFICES: *Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee · Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco*



New UD-282 diesel (upper left) and UC-221 carbureted (upper right) power units ready to go to work on your jobs. Max. hp of engines at 2400 rpm are: UD-282 diesel and UC-263 gasoline, 90 hp; UC-221 gasoline and UD-236 diesel, 75 hp.

Sectional views of direct-start diesel engine (left) and carbureted engine (right) show how models vary only in head and piston sections. Heavy duty, counterbalanced alloy steel crankshafts, F-77 tri-metal bearings and heat treated forged steel connecting rods are some of the common parts that make diesel ruggedness available for carbureted engine users.



FOUR NEW 75-90 hp International 6's Offer Lower Cost Heavy Duty Power

Now you can power your machines with the same four new heavy duty 6-cyl. 75-90 hp engines used in the rugged top of the line International wheel tractors being announced this month. Each new pair of smooth-running diesel and carbureted engines is interchangeable in power and dimensions. And because all four are specifically built for heavy-duty work, many parts are common.

The 90-hp pair, the new UD-282 and UC-263, as well as the 75-hp UD-236 and UC-221, feature: 1) efficient, economical valve-in-head design; 2) replaceable cylinder sleeves; 3) thru-hardened counterbalanced crankshafts; and 4) gear-driven induction-hardened camshafts for a new high in long life dependability.

The UD-282 and UD-236 are direct start diesels with time-proven International pre-combustion chamber design. Use of a ¼" larger bore in the diesels makes possible the same power as corresponding carbureted models with lower B.M.E.P. A glow plug for each precup is regular equipment for easy starting in any weather. Mechanical governors on all engines provide excellent speed regulation.

Installation is simplified by 6-cylinder built-in smoothness, wide operating speed range, compact design, and availability of matched power unit components including air cleaner, base, radiator, and enclosure.

Get the complete feature story from your International Power Unit Distributor or Dealer. Then you'll know how much these new engines can save you powering your new machines or repowering your old equipment.

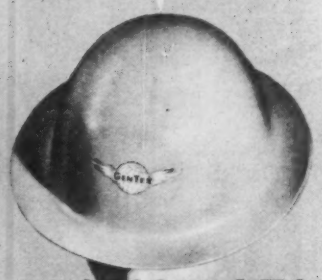
International® Construction Equipment

International Harvester Co., 180 North Michigan Ave., Chicago 1, Ill.

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors... Self-Propelled Scrapers... Crawler and Rubber-Tired Loaders... Off-Highway Haulers... Diesel and Carbureted Engines... Motor Trucks... Farm Tractors and Equipment.

SUPERIOR PROTECTION AGAINST

PENETRATION



in only 12½ OZS.

GENTEX SAFETY HAT

gives you LIGHTWEIGHT COMFORT WITH NO SACRIFICE OF PROTECTION.

It far exceeds all Federal safety specifications — including penetration resistance offered by no other lightweight hat — yet weighs within ¾ ounce of any hat made!

All-shift, every-shift protection with:

- Permanent no-wrinkle headband
- Insulation against heat, sun (and over 15,000 volts resistance)
- Snap-in sling and headband with fingertip adjustment
- Handsomely styled for steady wear in green, gray, white, yellow, blue.

MEN LIKE ITS COMFORT...THEY WEAR IT!

Send today for a test hat and full specifications. Ask about our lightweight, washable winter-liners

YOU CAN BET YOUR LIFE ON A GENTEX

World's foremost manufacturer of helmets for the military

GENERAL TEXTILE MILLS, INC. DEPT. N
450 SEVENTH AVE., NEW YORK 1, N. Y.

Reader Comment

Mr. Newcomb Answers a Critic

SIR—As Prof. A. S. Lang points out in his letter (ENR Aug. 7, p. 6), there are many variables in the economy. But, as he does not say, the burden of proof is on him who says that the shift in the trend in vehicle miles per dollar can be as sharp as it was after 1933 because of changes in the economy.

Shifts as abrupt as the one shown by the curve on page 39 of your June 19 issue rarely come from general changes in over-all conditions. They usually come from one, or at most a very few, important sharp impacts. FRB index, total and per capita income, employment, productivity, et al., were checked in 1929, not in 1933, and they resumed their rise after 1933 when the traffic curve dropped suddenly. But highway construction continued into 1933 and did not resume its rise viz-a-viz the economy until about 1954, at which time the traffic curve started up again. The first change, particularly, was too abrupt to be attributable to general economic developments, as Mr. Lang suggests.

It is strange to see Mr. Lang questioning my statement that "adequate highways increase the GNP by making it possible to move a greater volume of goods economically." Congestion, wear and tear, loss of time and other expenses incident to rough, hilly, curving and otherwise inadequate highways add to the cost of highway traffic. When they add to the cost to such an extent as to make other means of transportation less costly, the economy shifts traffic to other means of transportation. Mr. Lang seems to confuse mass transportation of heavy goods by pipeline, inland waterways and railroads with the transportation of finished products and components to and from producers', distributors' and consumers' doors.

There are now nearly 50% more truck trailers and semi-trailers than there are box cars, and the value of truck traffic now approaches 60% of the value of all rail freight traffic, even though trucks do not handle most heavy goods such as ore traffic. This has developed despite the inefficiency and inadequacy of highways. If the rails could be operated more efficiently they would carry a higher proportion of the total traffic. The fact that highways are gaining on rails despite the crowded condition of the highways is evidence that, increasingly, the market finds highways more satisfactory for many purposes, despite the many statistical studies which suggest rails would be more economical. Mr. Lang confuses, as do many academicians, his theoretical calculations as to what the market should find with what the market does decide, then concludes the market, not he, is wrong.

I get the impression that the June article did attract attention and interest, whether everybody agreed with it or not. I am sorry it was written so that it could be misinterpreted as Mr. Lang did, but part of his misinterpretation seems to have been due to a misapplication of statistical theory, and part to a belief that the market should reflect his judgments, and is in error when it does not.

ROBINSON NEWCOMB
Washington, D. C.

Short Columns Hike Costs

SIR—Prof. D. T. Wright's letter (ENR June 5, p. 8) regarding A. W. Finne's January 2 letter on welded joints in multistory buildings contained an interesting suggestion: To use columns in single-story heights and beams continuous over several spans instead of the usual multistory columns and single-span beams. The suggested method was followed in at least one of the early welded buildings in Cleveland. However, erection was more difficult because each story had to be plumbed separately. This would increase erection costs.

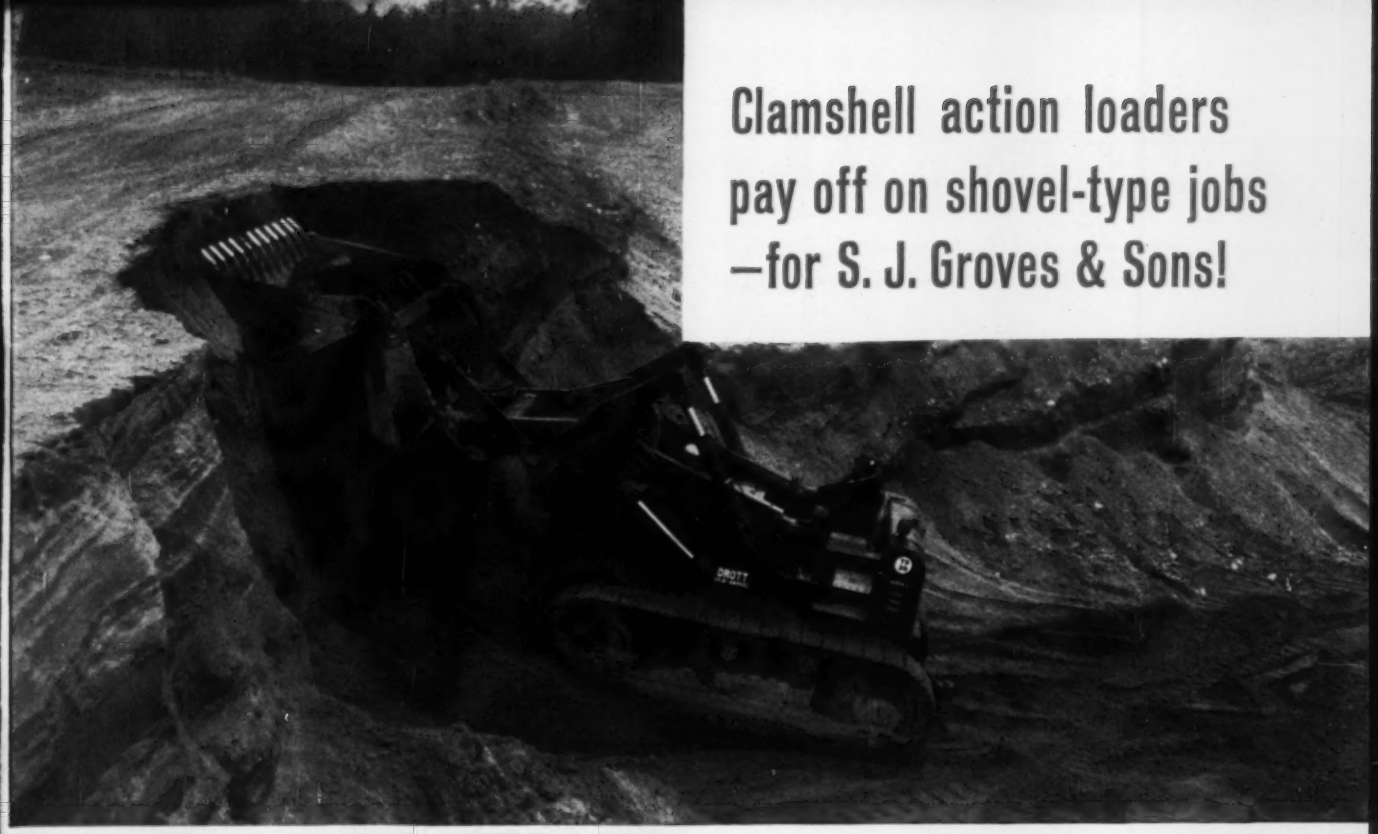
BURTON A. LEWIS
De Leuw, Cather & Co.
San Francisco, Calif.

Collapse Cause Uncertain

SIR—I would like to correct the opinion I am supposed to have expressed concerning the collapse of two of the spans of the Second Narrows Bridge, Vancouver, B. C. (ENR June 26, p. 22). It

Engineering News-Record welcomes expression of opinions from its readers. Comment should be as brief as possible and pertinent to subjects of current construction importance. Letters should be addressed Editor, Engineering News-Record, 330 W. 42nd St., New York 36, N. Y.

Clamshell action loaders pay off on shovel-type jobs —for S. J. Groves & Sons!



This Groves TD-20 4-In-1 (below) beats dragline excavating-loading production—on airfield construction near Burlington, Wisconsin! The nimble, fast-swinging 4-In-1 delivers a big daily yardage into bottom dumps—gives crawler mobility, 109-inch track stability, and quick TD-20 forward-reverse "Shuttle-Bar" travel speed! The TD-20 4-In-1 shown is filling its bucket with speedy, load-in-place clamshell action.

3-yd multiple-action TD-20 4-In-1's handle BIG job range!

"Back-dragging" with exclusive 4-In-1 clamshell action (above) pulls down highwall—mixes stratified layers—replaces big-capacity, power shovel performance on S. J. Groves & Sons New Jersey highway job. Further mixing by clamshell bottom dumping (at left) produces select fill material. In addition, this TD-20 4-In-1 loads out excess materials all over the project, including stumps and boulders — provides earth-rolling bulldozer action for haul road maintenance, wherever needed! Another Groves 3-yd International Drott 4-In-1 loads out fill on this project!

See what it means to multiply your job range and divide your machine investment by four — with an International Drott 4-In-1! Measure exclusive 4-In-1 advantages like pry-over-shoe break-out action, and shock-swallowing Hydro-Spring. Move the "machine-selector" lever—watch how a 4-In-1 can instantly replace one costly limited-duty machine after another, on job after job. See your International Drott Distributor for a demonstration of versatility unlimited!

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 15, Wisconsin

INTERNATIONAL® DROTT®

Contractors report NEW TD-20's are *with new power...*

In Washington, D. C., a pair of International Drott TD-20 Skid-Shovels operate double-shift—on the Shannon Construction Company ½-million cu. yd. excavating sub-contract for the new House of Representatives office building. Much of the time, the TD-20's are digging and loading gummy clay. "In my opinion," states Contractor W. D. Shannon, "the TD-20 Skid-Shovel is the only loader with the clearance, pry-out action, and fast operating travel and lift to do this job successfully. The TD-20 'Shuttle-Bar' has speeded up the operation, and so has its ease of handling."

increasing production up to 50%

new speeds..."Shuttle-Bar" control!

Modernizing a 10½-mile stretch of Louisiana 313, Contractor M. T. Bradley, Kentwood, Louisiana, makes use of new TD-20 speed and capacity—to clear right-of-way; doze heaping blades of water-logged soil to hurry drying; and as a pusher. "The TD-20 will load a 15-yd. rubber-tired hauler, in 75 ft. and in 25 seconds (average)," reports Mr. Bradley.

It's the combination of 134 hp, six forward and reverse speeds with "single-stick" shift, and rapid "Shuttle-Bar" direction-changing—that account for amazing work capacity in the new TD-20! You've got an instantly available forward and reverse speed range for every load, condition, and operating situation.

On dozing, push-loading, powering front-end loader—wherever owners take advantage of the new TD-20's greater hp and the new speed of applying it—they're setting new performance records for crawlers of this size range!

In certain instances, the new TD-20 is increasing material-moving production as much as 50%—compared to competitive crawlers!

See how TD-20 shifting and "Shuttle-Bar" direction-changing with just a sweep of the hand speed dozing and loading cycles. Measure how new TD-20 handling ease and response can boost your daily yardage and operator efficiency. See your International Construction Equipment Distributor for a demonstration!

This new International TD-20 powering the Bullgrader blade full of "dead" sandy soil clears land, roughs out right-of-way, and acts as pusher for a fleet of rubber-tired haulers. It's working on the F. C. Herling road-building job, near Franklin, Texas. "We like the TD-20 very much because it is fast, and will put 18 yards of dry, sandy dirt on a scraper in only 40 seconds," states Job Superintendent Bricker!

"The TD-20 can doze up to 50% more material per load than the comparable-sized crawler it replaces—and it's faster both in forward and reverse," states Walter Folger, president, C&F General Contracting Co., Inc., Shamokin, Pa. "The TD-20 has been the most effective tractor we have used." And the TD-20's operator adds: "The forward-reverse 'Shuttle-Bar' boosts our yardage, and doesn't work me so hard."

International® Construction Equipment

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

AFTER LOAD-FOR-LOAD COMPARISONS,

contractor trebles Payhauler® fleet!

Producing 380,000 cu. yd. of aggregate for their bypass paving contract (Rt. 277 around Abilene, Texas) Cage Brothers keep six units of their 9-Payhauler fleet busy at this quarry. With three units feeding crusher, and three stockpiling, the plant produces 7,000 cu. yd. of minus 2-in. aggregate daily.

Ton-for-ton and yard-for-yard, the road-building Cage Brothers, San Antonio, Texas, compared International Payhauler production with competitive off-highway rigs. Result: They trebled their "65" Payhauler fleet within a year!

Let Superintendent E. A. Rice give you the details:

"First we bought three Payhaulers and three competitive haulers. When we found it took two of them to equal one Payhauler, we got three more Internationals. Now (with more hauling) we have added another three, to give us nine Payhaulers.

"We've never had better equipment. Payhauler power, speed, and fast dumping cut cycle time. Operators go for Payhauler operating ease and riding comfort."

International Payhauler models give you fast getaway with a bonus of turbo-charged diesel power. They have a gear choice to match every load and road. And they provide the power-cushioning leverage of full-floating planetary drive axles, to minimize the slam-bang shock of off-road full-load hauling!

Try Payhauler "pick-up truck" spotting ease—assured by "zip-around" power steering and exclusive high reverse. Prove full-load ramp-climbing "muscle"—and up to 25% faster haul speeds. See how 7½-second dumping and Payhauler operating ease and safety figure sharply in out-hauling other makes, up to 2-to-1! See your International Construction Equipment Distributor for a demonstration.

With extra-large air brakes, air-assisted clutch, and integral hydraulic steering, the "65" Payhauler gives fingertip operating ease—even when hauling 18-ton loads over rough terrain. This pair is stockpiling aggregate for Cage Brothers.

International® Construction Equipment

International Harvester Co., 180 N. Michigan Avenue, Chicago 1, Illinois

A COMPLETE POWER PACKAGE: Crawler and Wheel Tractors . . . Self-Propelled Scrapers . . . Crawler and Rubber-Tired Loaders . . . Off-Highway Haulers . . . Diesel and Carbureted Engines . . . Motor Trucks . . . Farm Tractors and Equipment.

is quite true that the falsework did collapse, but there is no proof that this was the origin of the failure, and since the matter is to be determined by a commission, which has already been appointed, you may be sure that I shall express no opinion except before that commission

I might add further that, as the head of my firm, I was responsible for the general design and supervision of the substructure. My senior partner, Colonel Wooster, together with a team of senior engineers, was responsible for the design of the superstructure.

W. G. Swan
Consulting Engineer
Swan, Wooster & Partners
Vancouver, B. C.

Record-Length Trusses?

Sir—Concerning whether or not a record was set (for length of steel plate girders erected in one piece) by the Steel Construction Co. of Portland, Ore. (ENR June 26, p. 12):

We erected approximately 9,000 tons of structural steel for the Burlington Skyway Bridge, Burlington, Ont. Several months ago, we lifted 24 steel trusses, one at a time. Each truss, weighing 110 tons, was 200 ft in length and was lifted to a height of 112 ft. The lifting was done with two 80 ton crawler cranes.

We would appreciate hearing from your readers as to whether or not a record was set by our company in lifting the above-mentioned trusses.

H. W. Tanenbaum,
Sales Manager
Runnymede Steel Construction Co.
Toronto 9, Ont.

Adds Engineering Geologist

Sir—To the suggestion of Professors A. V. Corlett and C. L. Emery that civil and mining engineers team up on underground projects (ENR July 17, p. 57), I would like to add two thoughts: Include engineering geologists on the underground team with the civil engineer; and team up the engineering geologist and contractor, particularly in the pre-bid stages.

This challenging pre-bid work calls for the most realistic approach in what I call practical engineering geology—the interpretation of geologic conditions in view of the proposed works and using the information to determine construction methods, difficulty and costs for pre-bid use by contractors and their estimators.

Clark E. McHuron
Consulting Engineering Geologist
Belmont, Calif.

Noble

Vickrey

Mixed-Up Photos

Pictures were topsy-turvy on page 25 of the August 21 issue. The switch mixed Charles M. Noble, Ohio Highway Director, with J. W. Vickrey, California Deputy Highway Engineer. See above for the right identification—Editor.

▶ When I saw my issue (which comes to my home), I got a good chuckle out of it, and realized that you in the publishing business have your troubles, too. Sometimes, we highway officials think we have all the problems, so it is enlightening to find that others are in the same boat.

Charles M. Noble
Director
Department of Highways
Columbus, Ohio

Concrete Protection

Sir—Writing from California this time of the year makes it refreshing to discuss insulating forms for protecting winter concrete (ENR July 3, p. 56).

I am reminded of my youth in Denver, where I used to see concrete sidewalks poured in the wintertime and protected with blankets of straw. The idea, then, of protecting concrete from freezing during the winter by insulation seems not so new.

In fact, procedures outlined in the U. S. Bureau of Reclamation Concrete Manual, 6th ed., p. 325 to 331, describe several types of form insulation and give charts to determine thickness needed for various wall widths, cement contents and ambient temperatures.

B. Fahrney
Porterville, Calif.

On Professionalism

Sir—It is difficult for an employee to understand the position of National Society of Professional Engineers on the Wage Hour Law (ENR July 19, p. 120) which requires payment at least equal to the minimum wage and time-and-a-half for hours over 40 a week.

The article states in part: ". . . a

NEW

DOUBLE PLATED PROTECTION!

BULLDOG
Gold Digger
CONCRETE DRILL/ANCHORS

Here's far *more* for your concrete fastening dollar . . . *better* (double) plating with an *unmistakable* gold color finish . . . *plus* the best grip in the business.

Only Bulldog reverse-pitches the ridges to assure "the grip that never fails." Furthermore, Bulldogs are fireproof, vibration proof, safe, fast and easy to install. And *you save* the cost of special drills . . . and the time it takes to use them.

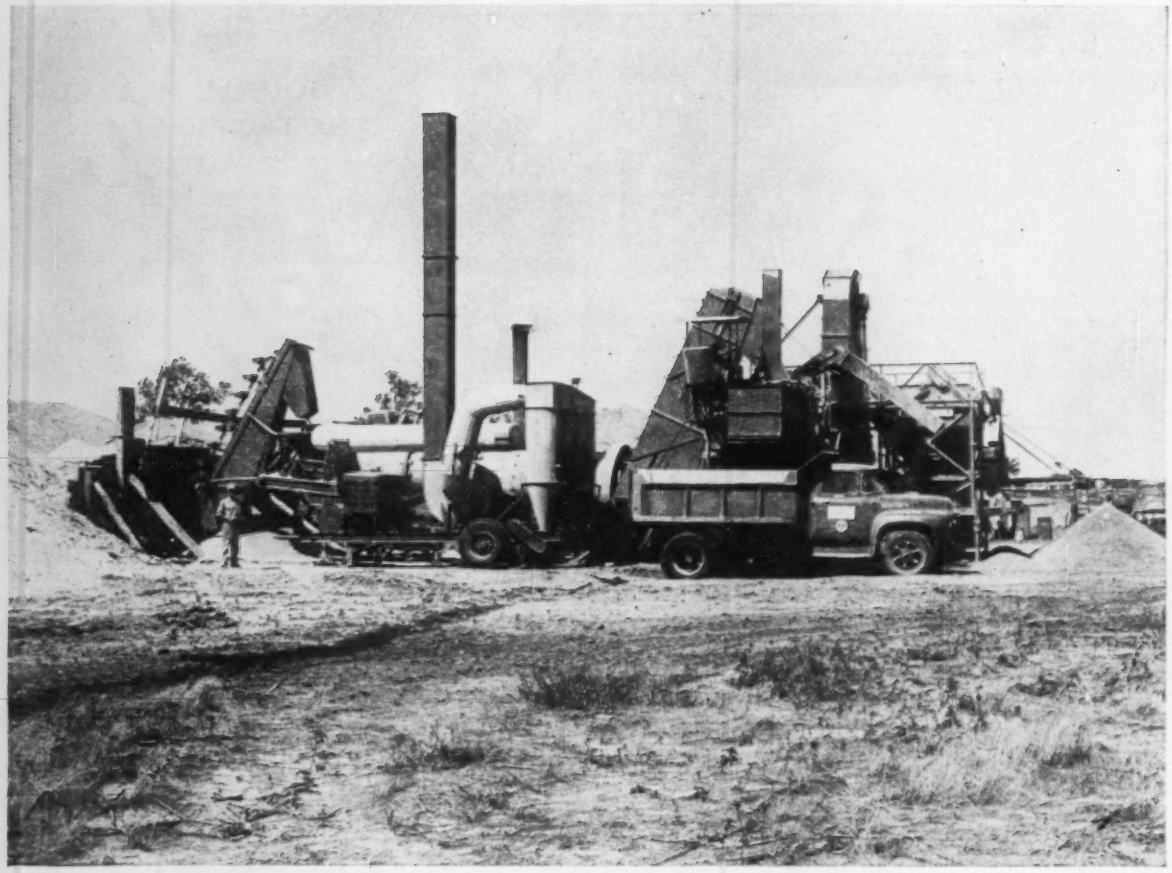
350,000 BULLDOGS USED IN BIG CANADIAN HOSPITAL
Three heliports crown St. Justine's Hospital in Montreal, one of the many big projects where Bulldog Drill/Anchors have been used.

ASK FOR NEW Gold Digger MANUAL

POLIS MFG. CO.
A Division of Gregory Industries
102-40 Toledo Ave.
Lorain, Ohio

☐ Rush sample of new Bulldog Gold Digger Drill/Anchor
☐ Include new Bulldog Manual
☐ Have your Representative call

NAME _____ TITLE _____
COMPANY _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____



George M. Myers, Kansas contractor, reports:

"Our Barber-Greene Asphalt Plant averages 900 tons daily"*

This is the output of Mr. Myers' plant at its 21st location.

Changing job sites 21 times is a good record for any asphalt plant, but it is not unusual in a Barber-Greene Model 845. Even among Barber-Greene plants, the 845 is outstanding. It was specifically developed to achieve the utmost in portability and should not be confused with any other continuous plant. The dryer includes the hot elevator on the same chassis . . . the mixer has two-bin gradation unit included—these and other features contribute to its superior portability and performance.

Mr. Myers continues:

"We frequently move 100 miles or more . . . deliver an average of 80 tons per hour* . . . maintenance to date has been routine . . . repair minor . . . operating costs low . . . with reasonable care there should be no limit to the life of our plant."

Like all Barber-Greene Continuous Plants, the Model 845 is inherently automatic as a result of the aggregate and bitumen feed being interlocked. The human element is removed, assuring uniform mix quality.

Barber-Greene offers a complete line of both continuous and BatchOmatic plants in any capacity to suit your needs. Write for full information.

*Rated capacity is 60-90 tons per hour.

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

young engineer denied exemption because of the salary requirement . . . $75 a week . . . is forced to punch a time clock. . . ." I agree that it isn't professional to punch a time clock. But being paid less than $75 a week doesn't seem professional either. If there are any engineers being paid less than $75 a week or any licensed engineers being paid less than $90 a week (as per the latest proposal) they most certainly need the protection of the law.

NSPE says doctors and lawyers are favored under the Wage and Hour Law by being exempted from it and want the same specific exemption for engineers. This is the sort of favored position we can do without.

SAMUEL J. HENRY
Iselin, N. J.

Engineers Not Named

SIR—An article I wrote, "Skyscraper Sprouts Through Railroad Terminal Tracks," about the Union Carbide headquarters in New York City, was published in ENR July 10, p. 34. Inadvertently, Weiskopf & Pickworth, who is responsible for the structural design of the project, was not mentioned in the article.

DONALD BYRNE
Project Manager
George A. Fuller Co.
New York, N. Y.

CALENDAR

World Power Conference, Canadian sectional meetings, **Queen Elizabeth Hotel,** Montreal, Sept. 7-11.

International Commission on Large Dams, Sixth International Congress, Statler Hotel, New York City, Sept. 15-19.

New England Water Works Association, annual meeting, Poland Springs House, Poland Springs, Me., Sept. 14-17.

Building Research Institute, conference on installation and maintenance of resilient smooth surface flooring, Sheraton-Park Hotel, Washington, D. C., Sept. 17-18.

Producers' Council, Inc., 37th annual meeting and chapter presidents' conference, Dupont Plaza Hotel, Miami, Fla., Sept. 17-19.

Michigan Aeronautics Conference, 6th annual, sponsored by Michigan Association of Airport Managers, Mather Inn, Ishpeming, Mich., Sept. 17-19.

Prestressed Concrete Institute, annual meeting and convention, Edgewater Beach Hotel, Chicago, Ill., Sept. 21-25.

American Public Works Association, public works congress and equipment show, Municipal Auditorium and Hotel Muehlebach, Kansas City, Mo., Sept. 28-Oct. 1.

Federation of Sewage and Industrial Wastes Associations, annual meeting, Sheraton-Cadillac Hotel, Detroit, Mich., October 6-9.

American Society of Civil Engineers, annual meeting, Hotel Statler, New York City, Oct. 13-17.

National Society of Professional Engineers, fall meeting, St. Francis Hotel, San Francisco, Calif., Oct. 23-25.

American Society for Metals, 1958, national metal exposition and congress, Cleveland Public Auditorium, Cleveland, Ohio, Oct. 27-31.

Presto SEAL*

"VITRIFIED CLAY PIPE THAT JOINTS LIKE MAGIC"

A REVOLUTIONARY DEVELOPMENT THAT AFFORDS MAXIMUM SAVINGS ON ALL INDUSTRIAL WASTE AND DOMESTIC SEWAGE SYSTEMS

If you're looking for ways to cut overhead, and who isn't these days — it will more than pay you to examine the *all new* Presto-SEAL clay pipe by KAUL. *"It joints like magic"* . . . reduces installation time by as much as 50%.

Here are the facts:

Simplicity of the Presto-SEAL joint permits assembly by unskilled labor . . . without tools . . . on dry surfaces or even under water. The spigot and socket are of molded polyester with a rubber gasket permanently imbedded in the socket. This combination is your assurance of:

- FAST ON-THE-JOB ASSEMBLY
- TIGHT, FLEXIBLE, PERMANENT JOINTS
- ROOTPROOF, LEAKPROOF, CORROSIVE-RESISTANT LINES
- TROUBLE-FREE SERVICE FOREVER

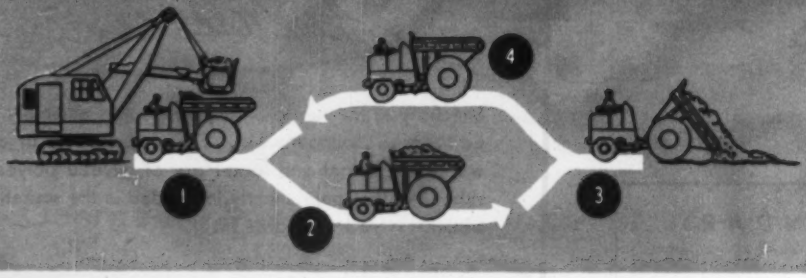
KAUL'S *exclusive* Presto-SEAL pipe conforms with A.S.T.M. Specifications . . . is available in a complete range of sizes from 4" to 36" in diameter, both standard and extra strength. Little wonder that architects, engineers and contractors alike are making Presto-SEAL pipe by KAUL first choice for better, more economical sewer lines everywhere.

KAUL clay company
TORONTO, OHIO • U. S. A.

* T.M. REG.

WRITE FOR COMPLETE INFORMATION, INCLUDING DESCRIPTIVE BULLETIN PS-101, OR CONTACT YOUR KAUL REPRESENTATIVE TODAY.

How to haul *without turning:*



1. **Dumptor gets load, with body forward in travel position.**
2. **Pulls away from shovel, body forward, ready to dump.**
3. **Dumps in one second — ready to shuttle back for next load.**
4. **Returns to shovel in high gear — all without turning.**

Shuttling between loading unit and dump area, Koehring® 6-yard Dumptor® travels round-trip *without turning.* It operates with equal ease in *both directions* along narrow haul roads, in tunnels, on overhead trestles — is especially practical for stockpiling, feeding crushers, loading cars. Dumptor gets this unique, no-turn advantage through a constant-mesh transmission that gives the same 3-speed travel in either direction.

Increases hourly output over 10%

By eliminating at least two slow turns on every trip, Dumptor cuts 30 seconds off normal cycle-time. This adds up to a substantial increase in yards or tons hauled per hour. For example — take a typical 1,000-foot haul where you are getting an average of 13.6 trips an hour with 2-turn operation. Even if Koehring Dumptor took the same time to load, haul, dump and return, its *no-turn* advantage would give you 15.4 trips. That adds up to an increase of 1.8 trips an hour on the same 1,000-foot haul.

Gravity-dumping cuts another 15 to 25 seconds off cycle-time. There's no waiting for slow-acting body-hoists. Operator trips the release lever, and *gravity* dumps the 6-yard load in *one second.* Costs stay low, because with gravity-dump, there are no expensive hoist replacement parts, or hoist maintenance.

Check what these Dumptor advantages mean in increased production, lower costs on your work. Call your Koehring Distributor or write for more information to:

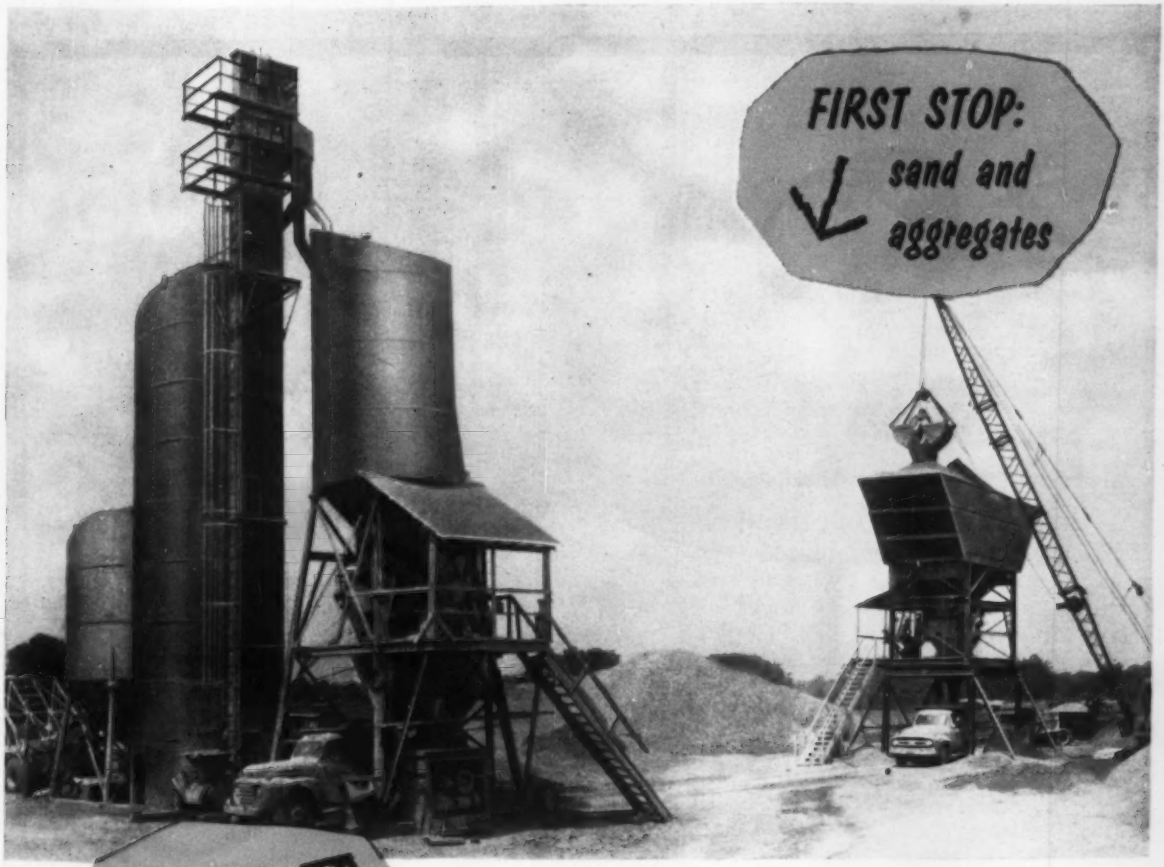
KOEHRING DIVISION of Koehring Company, Milwaukee 16, Wisconsin

K812

"Also ask about new 10-yard Dumptor"

KOEHRING® DUMPTOR®

EXCAVATORS • CRANES • *twinbatch*® PAVERS • FINISHERS • MUD-JACK®



On paving operations, costs and overall efficiency are very often determined at the batching end of the job, where a dependable, high rate of production and rigid specifications must be maintained. That's why experienced contractors install Johnson automatic batch plants, like the two-stop set-up shown here.

At the first truck stop, sand and two aggregates are loaded from 120-cu. yd. All-Purpose Bin. This aggregate plant takes any arrangement of single-material batchers, or one or two multiple-material batchers, sized for 34-E paver operation. Automatic push-button control maintains fast batching cycles, with pin-point weighing accuracy of every batch. What's more, with Johnson's graphic pen-recording system, there's *direct transmission* of weight from batcher-to-dial-scale on the control cabinet. You're always *sure* of a correct batch weight *and record,* to conform with the most rigid job specifications. Similar graphic recording and automatic batching at the bulk cement plant assures fast, accurate weigh-out at the second truck stop. This second plant, with its elevated and auxiliary ground storage silos, takes one or two 1000-lb. cement batchers, has big-capacity screw conveyor, bucket elevator and receiving hoppers for truck or rail delivery of cement.

Read all about it in the brand-new 36-page textbook catalog, which covers all phases of paving plant operation. It shows typical plant sites; takes you on "tour" through all types of Johnson 1, 2, and 3-stop plants; explains latest developments in plant automation, etc. It's yours for the asking. Contact Johnson distributor, or send coupon for your copy *today.*

C. S. JOHNSON CO., Champaign, Illinois
Send us free "Concrete Paving Plants" catalog

NAME_____

TITLE_____

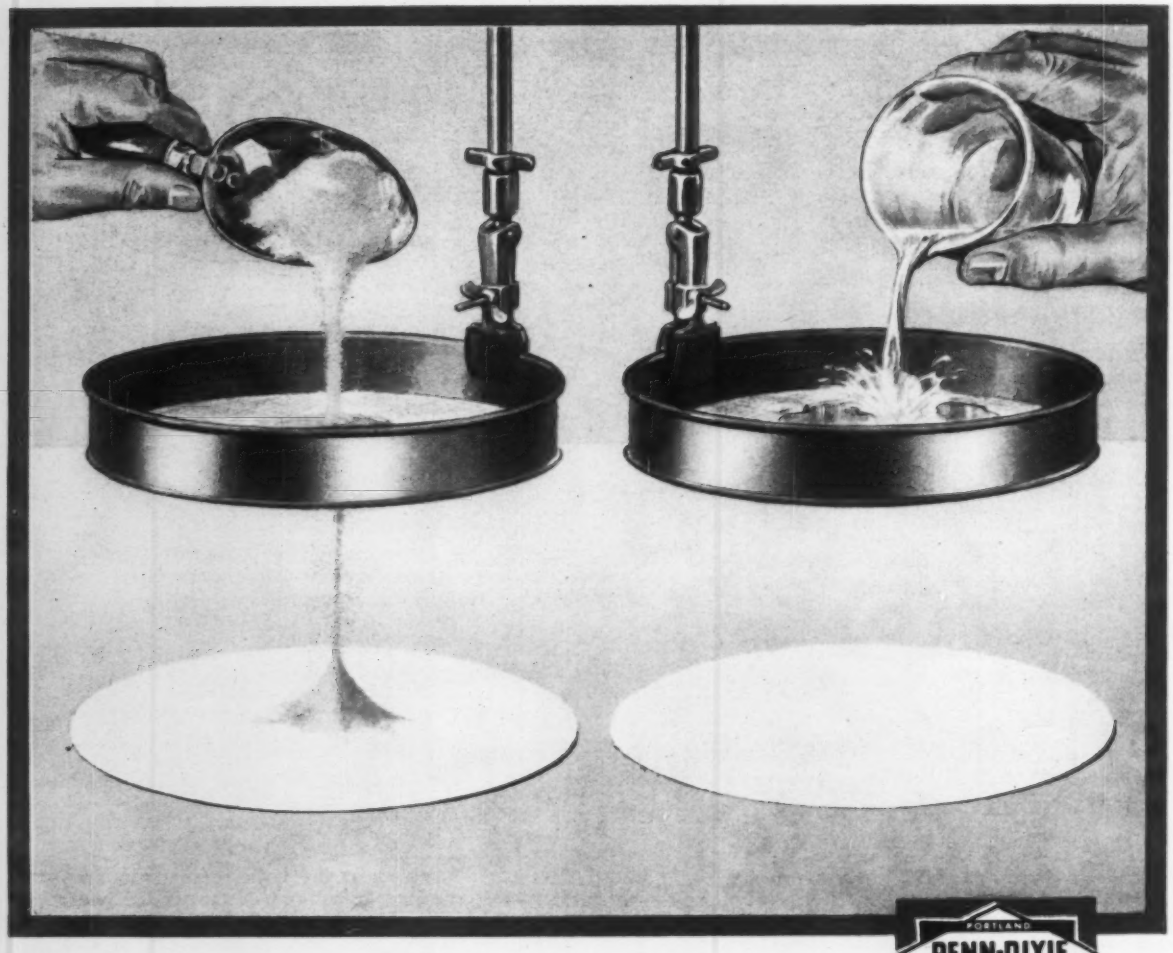
COMPANY_____

STREET_____

CITY, STATE_____

1756 ENR

C. S. JOHNSON CO., CHAMPAIGN, ILL. (Koehring Subsidiary)



PORTLAND
PENN-DIXIE
CEMENT

Penn-Dixie Cement Incredible as it May Seem . . .

. . . is so finely ground that more than 90% passes through a special sieve having 40,000 openings per square inch. Yet the same sieve will retain water.

Grinding is the final manufacturing stage when clinker is pulverized to the fineness described above. It is during this final grinding that small amounts of gypsum are added to control the "setting" time of the cement as this keeps the concrete workable while being placed and finished.

Altogether it requires 80 separate steps, from quarry to finished product, to manufacture Penn-Dixie cement. Only after the cement has passed *all* applicable Federal and ASTM specifications is it ready to be shipped and marketed under the Penn-Dixie label.

Penn-Dixie means Permanent Dependability

OFFICES

New York • Philadelphia • Pittsburgh • Boston
Chicago • Detroit • Atlanta • Des Moines
Chattanooga • Nazareth, Pa. • Milwaukee
Petoskey, Mich. • Buffalo • Holland, Mich.

PLANTS

Bath, Pa. • Nazareth, Pa. • Penn-Allen, Pa.
West Winfield, Pa. • Buffalo, N. Y. • Kingsport, Tenn. • Richard City, Tenn. • Clinchfield, Ga.
Des Moines, Iowa • Petoskey, Mich.

DISTRIBUTING PLANTS

Chicago • Milwaukee • Detroit • Holland, Mich.

PENN-DIXIE CEMENT *Corporation*

ENGINEERING NEWS-RECORD

Vol. 161, No. 10 September 4, 1958

Number of copies printed this issue 83,204

CONTENTS

NATIONAL AFFAIRS

Chicago Moves to Revamp Its Core 23
Sheet-Metal Bridge Survives Tough Test 25
Detergents Foul Wells, Halt Homebuilding 25
Local Group Maps Long-Range River Use 26
How to Run a Highway Department 27
Why Pennsylvania Needed Study 27
Big Money for A-Power Plant 28
River, Go Way From My Road 30
Itschner Urges Water Planning 30
Rules Proposed for Billboard Control 30

FEATURES

Cable-Hung Roof Goes to the Races 33
Tunneling Machine Tackles Hard Rock 39
Welding Defects Won't Slow Carquinez 42

FIELD AND OFFICE

Rig Has Maneuverability in Muck 50
Paver-Finisher Is Versatile 50
Steel Lipe Provides Quick Digging 54
Boom Attachment Handles Concrete Shapes 54

INTERNATIONAL

Australia Plans 2,000-Apartment Project 57
Mexico City Gets Glass-Walled Building 57

NEW PRODUCTS

Steel Beam Cuts Construction Costs 61
Tractor's Transmission Controls Are Simplified .. 61
Curbins Machine Uses High Pressure Extrusion .. 61
Manufacturers Publications 64

MEN AND JOBS

Corps Hires Woman Engineer Trainee 73
Taylor Will Head Lighting Society 73
Corey to Spark Waterworks Construction 73

BUSINESS AND FINANCE

Are U. S. Contractors Getting Hurt? 111
August Awards Didn't Match July 115
Costs Break Ceiling 115

LABOR

Labor Reform: New Approach Needed 117
New Hiring Clause Incorporated 120
Fund Bill Signed Into Law 120

Reader Comment ... 8
Calendar 15
Washington Observer 21
Obituaries 77
Legal 81
Unit Prices 85
Material Prices 88
Construction Reports . 89
Indexes, Statistics ... 110
Editorials 132

Back Issues of ENGINEERING NEWS-RECORD *are generally available for the previous six months. Semi-annual indexes will be sent on request.* ENGINEERING NEWS-RECORD *is also indexed in Industrial Arts Index and Engineering Index.*

THE CONSTRUCTION WEEK

BUILD NOW FOR GOOD PRICE—Competition is still so stiff among steel fabricators and erectors that some are taking jobs without profit or even at a loss. However, the price picture may change if demand for structural shapes keeps rising as it has been. July bookings were 330,890 tons, highest in 14 months.

BATTLE OVER?—Scaffolding now going up at the east front of the U. S. Capitol starts the work of extending the building 32 ft to the east, a shift ordered by Congress three years ago. Modelers soon will be at work on the scaffold taking molds of sandstone and limestone figures for reproduction in marble on the new east front. Bids are being opened this week for the marble work.

ALASKAN BOOM—Backlog of construction planned in Alaska rose 17% during the first seven months of the year, ENR figures show. Biggest item in the $248.8 million total was $49.3 million for highway construction.

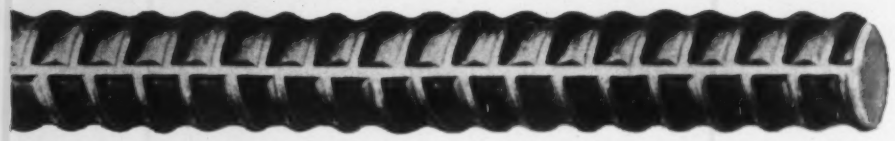
TARDY BUT GOOD—Delaware's attorney general tells school officials they need not throw out a school bid submitted a few minutes late. Slight variations from specifications or advertisements for bids do not destroy the bids, he says, unless they affect "the amount of the bid by giving the bidder an advantage or benefit not enjoyed by the other bidders."

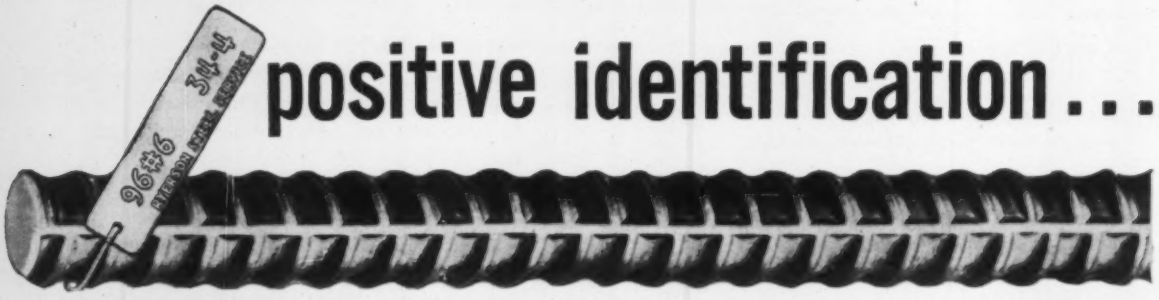
LIGHTING: MOSTLY BAD—The Illuminating Engineering Society reports that 85% of all offices, homes and plants aren't lighted well enough. Yet the group says good lighting is cheap: In general offices, 100 ft-c costs about the same as the time involved in a 10-minute coffee break. In a typical industrial plant, 200 ft-c is paid for if it saves workers just six minutes in an eight-hour day.

TURNPIKE HEAD SENTENCED—The suspended chairman of the Pennsylvania Turnpike Commission, G. Franklin McSorley, last week was fined $1,000 and sentenced to two to four months in jail for misconduct in office. But the Pittsburgh apartment-house owner got a week's delay in the sentence for an appeal to the state Superior Court. The misconduct charge grew out of a turnpike scandal centering around alleged "useless" mine filling in the anthracite areas to provide solid roadbed for the turnpike spur between Philadelphia and Scranton. Five others involved were convicted earlier (ENR Aug. 1, 1957, p. 23).

You can always depend on...

accurate fabrication...





positive identification...

and on-time deliveries with...

RYERSON REINFORCING SERVICE

JOSEPH T. RYERSON & SON, INC.

Member of the INLAND Steel Family

PRINCIPAL PRODUCTS IN STOCK: RE-BARS • WIRE FABRIC STEEL SPIRALS • REINFORCING ACCESSORIES • PLATES • SHEETS • STRUCTURALS • BAR JOISTS • CAISSON RINGS • STEEL FORMS (PERMANENT OR REMOVABLE), ETC. • DETAILING SERVICE ALSO AVAILABLE

PLANTS: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND • DETROIT PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

WASHINGTON OBSERVER

- **Outlook good for military work**
- **Anti-inflation moves begin**
- **Boost coming in overseas aid**

● **Contract awards for military construction this year will be higher than in fiscal 1958—the year that ended June 30.**

Military officials estimate privately that awards for the current year will hit about $1.7 billion—which would be some $200 million more than last fiscal year. The rise comes despite the appropriation cut of $350 million below what President Eisenhower asked for military construction for this year.

The answer, of course, is $905 million of funds carried over from last year by the Air Force. Included in this sum is $520 million that Congress rushed through right after it opened in January, as part of its answer to the Soviet Sputnik. The $520 million will build new SAC dispersal bases, new missile installations, radar warning systems, and the like. These projects are just now nearing the stage where bid invitations can be issued.

The increase in this kind of construction will more than outweigh the reduction in other construction of such things as commissaries, officers quarters, warehouses and other structures less closely tied to weapons.

—

● **President Eisenhower's ruling on government purchases of housing mortgages (see page 114) is the first concrete result for construction** of the recent White House decision that the recession is over and the problem now is to fight inflation (ENR Aug. 21, p. 23).

The new move isn't likely to make a dent in the federal deficit. The theory is that by lowering prices on mortgages, builders will be forced to absorb the discount now established for government commitments and purchases. This should tend to force them into the private markets for credit—at a higher cost to them—which in turn tends to put more of a squeeze on the builder.

Officials privately estimate that the emergency housing program is going to boost starts this year to around 1.1 million or more. Hence, the time has come to ease up on government stimulation.

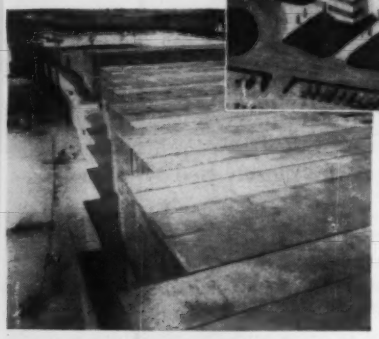
Big question that all this raises: Will the President spend all the funds Congress voted for other types of public works? For instance, Congress added many new starts on Corps and Reclamation projects—none of which President Eisenhower requested. He already has said that he is going to look at all programs to see if they are really necessary. Besides new starts, the President will put his fiscal advisers to work on increased spending voted for going projects.

—

● **Overseas construction will get a boost in the next year or so from new changes in U. S. foreign economic policy.** The U. S. will support increases in the World Bank and International Monetary Fund loans. We will also support formation of development banks world-wide—particularly in the Near East and Latin America. That's in addition to the regular U. S. foreign aid money ($3.3 billion this year).

But the new soft-currency development programs will take time to set up. When they are set, they will depend on international contributions, not just from the U. S.

'Incor' Concrete Shield for Atomic Targets

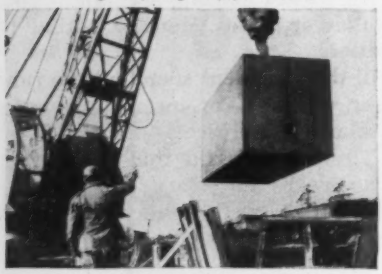


MASSIVE SHIELDING (left). Dense concrete blocks, weighing as much as 34 tons, enclose experimental area in Target Building.
(right) Speeding protons are guided in tight beam around synchrotron ring by a series of magnets.

ASSOCIATED UNIVERSITIES, INC.
BROOKHAVEN NATIONAL LABORATORY
Target Building, Upton, New York

High Density Concrete Shielding Blocks
PRECAST BUILDING SECTIONS, INC.
New Hyde Park, Long Island, New York
Main Office: New York City, N. Y.

'Incor' Concrete Supplied by
SUFFOLK SAND & STONE CORPORATION
Yaphank, Long Island, New York



HIGH-DENSITY CONCRETE (above). 'Incor' concrete, of over 246 pounds per cubic foot, was cast at contractor's batching plant in winter weather.

High-Density 'INCOR' Concrete Encloses Target Area in Brookhaven's Half-Mile Synchrotron

● To minimize the possibility of radiation, massive shielding blocks of extremely dense concrete enclose the target area of the Alternating Gradient Synchrotron at Brookhaven National Laboratory, Upton, New York.

The synchrotron will be the world's mightiest atom smasher. Speeding protons will circle the half-mile underground track 300,000 times per second. Accelerating to a top energy of 25 to 30 billion electron volts, they will smash into stationary target atoms.

Enclosing this target area is a total of 1,446 high-density 'Incor' concrete shielding blocks. These range in size from 1′ x 1′ x 4′ plug blocks to massive cover beams measuring 4′ x 2′ x 34′ and weighing up to 34 tons. In the shielding blocks, iron ore aggregate was used to produce concrete weighing over 246 pounds per cubic foot.

Produced by conventional mass-production methods, strict laboratory standards were maintained. Each shielding block was cast to strictest dimensional tolerances, with the maximum allowable deviation of only ⅛-inch between parallel faces.

Modern concrete know-how made it possible to cast the blocks at an off-site plant during winter months at temperatures as low as 20 degrees F. —with night temperatures often at zero. 'Incor',* America's FIRST high early strength portland cement, permitted forms to be stripped in 24 hours.

*Reg. U. S. Pat. Off.

LONE STAR CEMENTS COVER THE ENTIRE CONSTRUCTION FIELD

LONE STAR CEMENT CORPORATION

Offices: ABILENE, TEX. • ALBANY, N. Y. • BETHLEHEM, PA. BIRMINGHAM • BOSTON • CHICAGO • DALLAS • HOUSTON INDIANAPOLIS • KANSAS CITY, MO. • LAKE CHARLES, LA. • NEW ORLEANS NEW YORK • NORFOLK • RICHMOND • SEATTLE • WASHINGTON, D. C.

LONE STAR CEMENT, WITH ITS SUBSIDIARIES, IS ONE OF THE WORLD'S LARGEST CEMENT PRODUCERS: 21 MODERN MILLS, 48,900,000 BARRELS ANNUAL CAPACITY

Government center (right) will pace Chicago's face-lifting. Fort Dearborn plaza (left) comes later.

Chicago Moves to Revamp Its Core

This week Chicago will take the first step in a $1.5 billion master plan to redevelop its 13 sq mi central area. It's the largest proposal ever undertaken by that city and perhaps by any other city. The construction timetable covers 22 years.

To make sure the program gets off the ground, the city's planning commission has an "action" program with a 1960 target date for completion of stage one. Some other Chicago redevelopment plans have failed to get beyond the blueprint stage.

The city's ambitious proposal includes projects in these major categories: government centers, railroad terminal consolidation, transportation center, traffic plans and automobile parking, conservation, redevelopment and housing, recreational facilities, and an expanded University of Illinois campus in Chicago.

The cost will be borne by private enterprise, by federal, state and city government. The $1.5 billion program will cost an average of about $75 million per year.

Chicago makes no small plans. During the last five years the city has come up with these: a $180 million five year street, highway and sewer program (ENR Dec. 31, 1953, p. 38); $400 million Fort Dearborn project for redeveloping 150 acres of land just north of the Chicago River (ENR Mar. 25, 1954, p. 23); a $300 million, 25 year waterworks expansion plan (ENR Sept. 29, 1955, p. 73); and a $675 million, five year public works improvement plan (ENR Apr. 5, 1956, p. 26).

First step in the new plan is submission this week of proposed sites for government buildings for approval by the Public Buildings Commission of Chicago.

Here are the specific proposals in the plan:

• **Civic center**—In the north central part of Chicago's "Loop" area, a civic center would be built in two stages, spanning 12 years. Present city, county and state buildings would furnish a base. The first stage would include a civil courts building for $20 million; a city office and courts building for $17.8 million, and a state of Illinois building for $4 million. Mayor Richard J. Daley says these structures will take care of present expansion needs.

Second stage would provide $41 million worth of office buildings for city, county and state needs anticipated for 1970. A federal building, with 1.5 million sq ft of floor space in four 20-story towers, would dominate the development. Chicago river frontage would be "beautified" with parks and plazas on the north and south banks (picture).

• **Federal center**—On the south edge of the Loop, using the present federal building as a base, a second cluster of governmental offices would be built in stages. These would include a federal courts building, U. S. Court of Appeals building, federal plaza with fountain, and a 1 million sq ft federal offices building.

Total cost of federal buildings on both north and south ends of the Loop: about $98 million. Total cost of the

. . .Chicago plan includes $17 million worth of relocation on Lake Shore Drive

entire government center development, including city, county, state and federal buildings: $180 million. Rental cost for buildings would be $5.50 per sq ft, covering debt service charges and all operating costs.

The original Fort Dearborn plan, proposed in 1954, suggested that most of the governmental buildings be built in a center on the north bank of the Chicago River. This proposal met with some resistance on the part of lawyers, judges and real estate interests. Even though all public buildings now would be located south of the river, the Fort Dearborn program has not been discarded. Many of its suggestions for residential improvement are included.

A feature of the proposed government center is separation of pedestrian and vehicular traffic. A series of elevated pedestrian ways would link groups of buildings above street level, while sunken plazas would connect below street level to give direct access to rapid transit stations.

• **Railroad terminal**—Chicago's position as the nation's railroad hub has meant a lot to its economic well-being. But the vast network of tracks, switching yards and terminals has strangled the area south of the Loop.

Over the years, there have been many proposals for consolidating three or four of the old depots. Last year an authority was set up to take a long, hard look. The new central area plan proposes three of the terminals be swept aside, along with huge slices of trackage. It calls for a consolidated railroad terminal west of the Loop—using facilities that now make up the Northwestern and Union Stations.

This terminal then would be part of a new Transportation Center, which also would incorporate an airlines terminal, heliport, Chicago Transit Authority bus terminal for airport limousines and inter-city carriers, and major parking facilities for autos. This big center would be developed in stages.

• **University campus**—By clearing big areas of the South Side, room would be made for a University of Illinois campus on a 130 acre site. This school's Chicago branch currently is located at the Navy Pier on Lake Michigan, but is restricted to a two-year curriculum. It has been trying to expand for some time (ENR Aug. 14, p. 104).

• **New housing**—A key proposal in the plan is housing for 50,000 families. City Planning Commissioner Ira J. Bach says it is the "most important objective" of the entire proposal. The housing would be designed for various income groups. It would have the effect of clearing large sections of slums and, the city hopes, lure some suburbanites back to the downtown area. Much of the area south and east of the proposed university campus would be reserved for apartment buildings. The planners see 23,000 new living units in what is now a dismal industrial and blighted residential area.

Proposals for residential development on the North Side call for a variety of dwelling types, depending on the "character" of the neighborhoods. All told, 19,500 new dwelling units would be built in the north area, much of it in slum areas. In addition, certain sections are earmarked for possible light manufacturing and mixed commercial and cultural development.

• **Recreational area**—The plan also proposes three major recreational areas along the shore of Lake Michigan. Two of them would be created by man-made islands on the South Side. A third island would be created on the North Side to provide a yacht harbor. Also, a large section of the lake would be filled in on the North Side to provide better beach facilities. The plan favors enlarging Chicago's downtown area port facilities by adding eight berths at Navy Pier.

• **Traffic plan**—The planning commission suggests $17 million worth of relocation work on Lake Shore Drive, the main north-south artery along the lakefront. Here the plan runs counter to a prior proposal for a $50 million development of the drive in its present location.

Also the Southwest Expressway would be extended to connect with Lake Shore Drive to serve the proposed lake-front exposition hall (ENR Aug. 21, p. 135). Among numerous other street changes the plan proposes development of Franklin St., on the west edge of the Loop, as an expressway, at a cost of $30 million. Additional perimeter roadways as well as access to the central commercial district would be provided by inner and outer distributor roadway rings. Total estimated cost of traffic facilities: $204 million.

Peripheral parking terminals are proposed in locations connected to the expressway and distributor ring roads.

For public transportation, the planners back an earlier proposal for new subway tubes in the Loop area, one of them to be for buses.

• **Action**—Proposed sites for federal buildings will be submitted to General Services Administration for approval. Similar okays must be obtained from state, county and city governmental groups in order to go ahead with other public buildings. After approval is received, revenue bonds will be issued by the Public Buildings Commission for first stage construction and land acquisition. Then architectural contracts will be let for the civil courts buildings, the federal courts building, and the federal office buildings, which comprise the first stage.

The plan for railroad consolidation will be submitted to the Chicago Railroad Terminal Authority for additional engineering and economic studies by January, 1959. With a definite program in hand the city then will seek release of land in the South Side railroad terminal area. The feasibility of locating the University of Illinois campus there must be established not later than February, 1959.

The first stage of the transportation center is expected to be the Airlines Terminal Building. The Planning Commission says the city, in cooperation with the airlines, should finance and plan it in 1959.

Commissioner Bach says the project needs a push to start off and suggests that a "special expediter" be named.

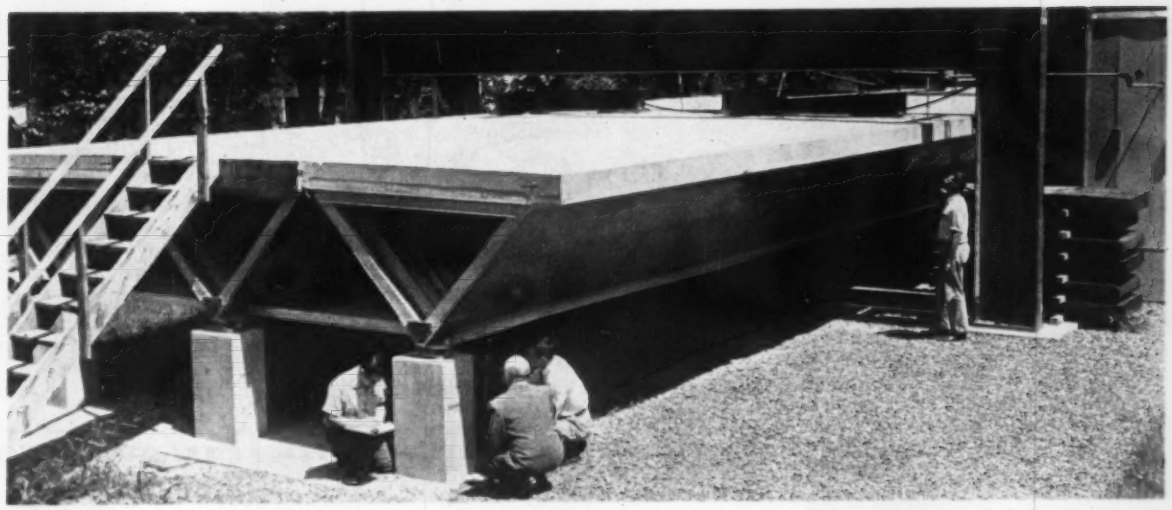
The plan for the central area was developed by the General Plan Division of the Department of City Planning. Contributing to preparation of the plan were James C. Downs, Jr., consultant to the mayor on real estate matters; William Hartmann, partner in Skidmore, Owings & Merrill, Chicago architects, and L. R. Solomon and John D. Cordwell, architects and city planners.

PCA's New Structural Lab Will Open Next Week

What has been termed the "world's largest testing machine"—although it is in reality a laboratory—will be on full display next week at the Portland Cement Association's laboratory in Skokie, Ill., near Chicago.

The new Structural Development Laboratory is part of PCA's $3 million expansion of its laboratory facilities, which were constructed in 1950 (ENR June 15, 1950, p32). It will provide facilities for testing large-scale structural elements up to 120 ft long. The laboratory is unusual in that it contains no testing machines, but is in itself a giant testing machine.

The testing floor is a 12 ft deep hollow box girder pierced by holes spaced 3 ft c-c each way. In making a test, steel rods are attached to the object under test, extending through these holes and attached to jacks beneath the floor. Test loads are applied by the jacks, which can exert a maximum total force of 2 million lb on a 50 ft beam



Jacks apply one million load cycles to aluminum as . . .

Sheet-Metal Bridge Survives Tough Test

A light-gage aluminum highway bridge of cellular construction was unveiled last week at Lehigh University, Bethlehem, Pa., where it has been undergoing load tests. The main metal portions of the 50 ft span test section are ⅛ in. thick or less.

The structure is being subjected to both static and dynamic loading. More than one million cycles have been applied. This is estimated to represent more than 100 years of normal service, by Prof. William J. Eney, director of Lehigh's Fritz Engineering laboratory. He believes this is the first time a highway bridge has been tested in a simulated service condition to prove its structural adequacy and insure fully satisfactory use during its lifetime.

• **Like an airplane**—The light-gage bridge was designed and built by Fairchild Engine and Airplane Corp. at Hagerstown, Md. The test project also was sponsored by the Aluminum Company of America, Kaiser Aluminum and Chemical Sales, Inc., Olin Mathieson Chemical Corp., Reynolds Metals Co. and the Bureau of Public Roads. Objective of the designers was to employ "aircraft design principles" to make possible a new-type aluminum bridge that would be competitive in price with bridges made of other materials.

Existing aluminum bridges are shaped in much the same way as those made of structural steel. Sponsors of the new bridge believe that such designs do not use aluminum at its greatest efficiency and therefore are unnecessarily high in cost. They figure that mass-production techniques applied to light-gage aluminum could bring costs into the competitive range.

The new-type aluminum bridge is made of alloy 6061-T6. This has a yield strength of 40,000 psi and an ultimate strength of 45,000 psi.

• **Cellular construction**—Representing a two-lane wide bridge, the test section consists of three 50 ft hollow triangular beams made of 0.081 in. thick rolled aluminum sheet. The thin metal is stiffened at close intervals by riveted aluminum extrusions.

Bolts hold the three beams together at the top, forming a continuous top flange 24 ft wide on which a lightweight (100 lb per cu ft) concrete deck was cast. Shear ties assured composite action of beams and deck. At the bottom of the 4 ft deep beams, ⅛ in. thick aluminum sheets were inserted to form the bottom flange. Extruded bulb-angle stiffeners were riveted to the sloping webs and the bottom flange to prevent buckling.

A transverse "thermal" beam was incorporated at each end of the bridge section. Its purpose is to take the thermal stresses arising because of the difference in coefficient of expansion of aluminum and concrete.

The 50 ft aluminum bridge section weighs only 11,300 lb, about 9½ psf.

The bridge, designed for H15 truck loads, has been tested successfully under static loads up to 150% of design moment. It has withstood eccentric loading placed 6 ft from the center of roadway up to 125% of design moment. And it has taken more than one million cycles at 150% of design moment.

Detergents Foul Wells, Halt Homebuilding

The appearance of synthetic detergents (syndets) in individual well supplies has caused the Suffolk County, N. Y., health department to halt temporarily residential construction in several sections. The action affects highly populated areas not served by public water supplies. Construction of more than 150 homes in one area alone was stopped.

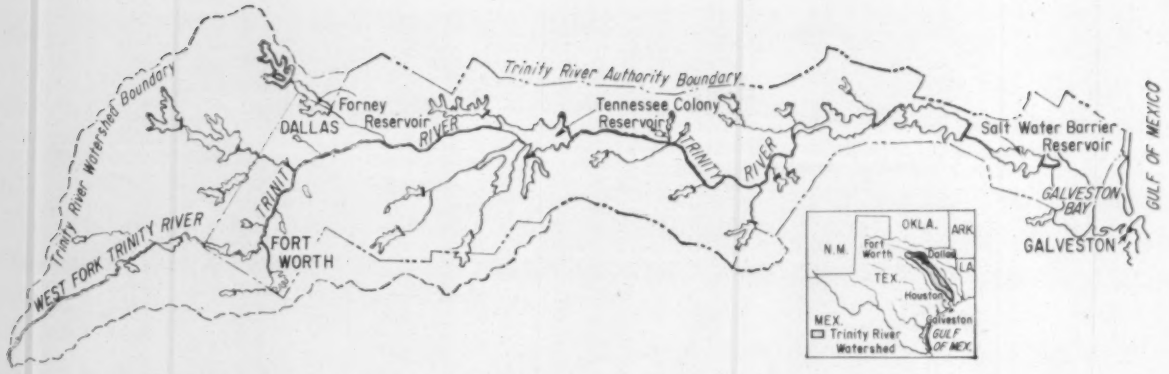
The ban is to remain in effect until arrangements are made to bring public supplies to the areas affected or until well distance from cesspools is increased from 65 to 100 ft and well depth increased to 40 ft.

The presence of syndets in the well waters was traced directly to seepage from cesspools. Cesspools are used over a large part of Suffolk for disposal of sanitary wastes, which include large amounts of household detergents.

Syndets in well supplies were discovered about three years ago. Since that time complaints of taste and frothing have steadily increased. The ban was started by the discovery of syndets in 60 of 186 wells in one 72 acre subdivision.

Outside of taste and foaming, which appear noticeable above concentrations of 1.0 ppm, county officials express some concern over the possibility of bacterial contamination from the cesspools.

The increased well depth ordered by Suffolk County is designed to prevent the drawing of water from the top of the groundwater table where the syndets are now mainly located.



28 new reservoirs and 395 mile barge channel are big construction items as . . .

Local Group Maps Long-Range River Use

Prospects for an early start on joint local and federal development of water resources in the Trinity River basin in Texas brightened considerably with Congressional action just before adjournment. The lawmakers put up $100,000 for the Corps of Engineers' portion of a basin-wide study begun by the locally sponsored Trinity River Authority.

The Corps' Southwestern Division, headquartered in Dallas, will spend the money checking the feasibility of navigation and flood-control projects proposed in the ambitious plan of the local authority. The program is embodied in a report made for the TRA by Forrest & Cotton, Dallas consulting engineer.

The Trinity development plan is believed to be the first comprehensive basin-wide program in the U.S. to be developed at local level. It is likely to be followed by others. There are 11 river-basin authorities in Texas. No statewide planning authority exists.

• **Construction involved**—The scheme covers comprehensive long-range development of water and soil resources in the entire 18,000 sq mile watershed, which includes Dallas and Fort Worth. Principal construction features are 28 dams and a 395 mile navigation channel.

The TRA proposes to build 19 of the dams. The other nine (one is an enlargement of an existing dam) would be built by the Corps of Engineers and three communities—Dallas, Fort Worth and Haltom City.

The dams will impound 12 million acre-ft of water for water supply, flood control and siltation control. Some 9.6 million acre-ft of the storage would meet municipal, industrial, irrigation and navigation needs; combined municipal and industrial demands would account for 76% of that figure, irrigation 20% and navigation 6%. The total amount of water eventually needed in the basin was assumed, in making the study, to be all the runoff of the Trinity and its tributaries.

The channel project by the Corps is an integral part of the TRA master plan. Essentially, it consists of a navigation channel 150 ft wide and 9 ft deep from the Gulf of Mexico to Fort Worth. A 6 ft channel already exists in the lower part of the river. Length of the channel would be cut from 568 miles to 395 miles during the job.

The navigation project will require construction of 26 locks with 75 x 400 ft chambers. Lifts will vary from 12 to 30 ft individually. Total lift will be 496 ft.

• **An unusual swap**—Besides the new projects, the master plan incorporates a dozen existing major reservoirs in the Trinity basin. It also includes soil conservation, pollution control and levee construction.

Two of the existing reservoirs upstream from Dallas on Trinity tributaries will be involved in an unusual exchange of water benefits under a proposal embodied in the master plan. Dallas proposes to build a new dam above each of the existing structures, which now provide both water-supply and flood-control storage. The city would then swap flood-control storage in the new reservoirs for additional water-supply storage in the old. That would save transmitting the extra water needed by the city the additional 15 or 20 miles from the new reservoirs.

Soil conservation districts are still preparing a part of the over-all plan dealing with soil conservation and upstream flood prevention. Present plans call for about 1,250 detention structures, of which 144 are constructed or under contract.

Stream pollution is described by Forrest & Cotton as particularly bad in the Fort Worth-Dallas area because of insufficient treatment of sewage and industrial wastes. Farther downstream oilfield wastes are a problem. In the lower reaches, salt-water intrusion from Trinity Bay frequently makes the fresh water unfit for irrigation.

The TRA is taking positive action to fight pollution in the Dallas area by providing a sewage-treatment plant. Scheduled to start operating next year, it will have initial capacity for a population of 240,000. Eventually the plant will serve 800,000.

Nothing definite is on the boards yet to cope with the oilfield brines, but salt-water intrusion near the mouth will be blocked by a tidal barrier dam. One of the four major dams planned for the main stem of the Trinity, it will impound 535,000 acre-ft, of which 70% will be available for water supply.

The state legislature established the Trinity River Authority in 1955, but made no provision for supporting it financially. A voluntary association called the Trinity Improvement Association solicited funds from private sources to pay for the engineering study. This group also pressed the request to the Corps of Engineers that resulted in the $100,000 appropriation. The original request was for $250,000. Following Senate okay of that amount and House approval of $15,000, conferees from the two chambers compromised at $100,000.

Coming Next Week . . . World Progress in Dams

In recognition of the Sixth International Congress on Large Dams, in New York City, September 15-20, Engineering News-Record will publish next week a notable group of articles on World Dam Progress. Authors are: Andre Coyne, France; Carlo Semenza, Italy; Tore Nilsson, Sweden; Henri Gicot, Switzerland; and Calvin Davis, U.S.

How to Run a Highway Department

A searching new study tells how to build efficiency and dignity into a state highway department.

Many of its recommendations could apply to any state, says a spokesman for the Automotive Safety Foundation, which did the study for the Commonwealth of Pennsylvania.

The study covers basic highway policy, top management, department organization, personnel, productivity, urban-area problems, planning, design, right-of-way, construction and traffic engineering. Recommendations on each subject call for both legislative and administrative improvement.

The U. S. Bureau of Public Roads helped finance the study; it was a federal-aid project. Pennsylvania's governor and legislature asked for it. And what they got adds up to a call for drastic changes in traditional policies.

ASF, a nonprofit, industry supported group, has done reports for 21 other states. But others have been primarily highway planning studies. This is the first to tackle highway department management in such detail.

1. Basic Highway Policy

Start with existing laws, the study recommends. If they're not good enough, they should be changed. And the study sets forth some guides on what the laws should provide for:

- Tenure of employment based on merit and qualification.
- Continuity of policy in administration at the executive level.
- Strong, modern controls on right-of-way acquisition and access.
- Effective development of urban transportation plans.
- Clear authority for control of traffic on roads and streets.
- Consolidation of local rural road operations.

Administrative policies also need changing, says the report, unless they:

- Effect modern recruiting, training and promotion of highway personnel.
- Include comprehensive plans for highway development in urban areas.
- Enable the department's own staff to handle a great proportion of its engineering design.
- Speed right-of-way settlements.
- Provide for extensive research.

2. Continuity in Management

Continuity of planning and continuity of organization are fundamental to economy, the ASF report declares.

Having studied organizations in all states, it concludes that the predominant form of top management provides for a single executive operating under a part-time commission. This single executive management has the advantage of continuity.

The executive director of the department must be authorized to organize and administer it. He should appoint as his chief deputy a chief engineering officer. And this engineering officer should be "a competent highway engineer registered as a professional engineer," says ASF. (It is not to be assumed that only qualified engineers fill engineering posts in highway departments, as documented below.)

Political influence should have no part in the selection of top management of the highway department.

3. Getting Good Personnel

Quality and quantity of highway department personnel are immediate problems, with shortage of qualified engineers and technicians of particular concern.

On this score the ASF report states: "A good civil service system of personnel administration . . . provides a modern and progressive plan for public employment based on merit principles and scientific methods governing the appointment, promotion, transfer, layoff, removal and discipline of employees."

Extension of civil service classification to all department people but the director and his chief (engineering) deputy is recommended.

Stress is put on the use of engineers in engineering positions. The report recalls a 1956 Highway Research Board statement that of all state highway department personnel classified as engineers, only 44% were engineering graduates and another 17% were registered professionals although not graduates.

These specific recommendations were made in the report:

- Raise entrance qualifications for engineer positions to include only graduates or licensed engineers (as recommended by the American Association of State Highway Officials).
- Fill key positions from the ranks.
- Recruit more young men—under 35.
- Add a summer training program for civil engineering students.
- Develop training programs for technicians and engineers.

4. Raising Productivity

Recommendations of techniques for improving productivity take account of the huge and growing work load imposed by the federal-aid highway program.

Development of electronic data processing for engineering problems needs a push; data processing should be centralized. Survey methods need modernization, including organization of a photogrammetric unit.

Duplicating, photo-processing, reproduction and printing should be consolidated, and a central library with a trained librarian should be established.

The ASF report-writers also suggest

Why Pennsylvania Needed Study

Pennsylvania has 106,000 miles of roads and streets—tenth largest system in the country.

State highway expenditures will approach $450 million this year and will reach a peak of $590 million in 1959 with final expenditures on the interstate system.

The Keystone State's highway department has had 17 chief administrative officers in the last 40 years. Its personnel records are as bad:

- 41% of its engineers and 72% of its technicians have served three years or less.
- Only 27% of its employees classified as engineers are graduates or licensed professionals. (Pennsylvania showed up as the worst state in this regard in 1956.)
- 500 additional engineers could be used by the department right now.

Of 14,473 people employed last January, 4,032 were salaried and 10,441 were hourly workers, mostly in maintenance.

Among salaried personnel, 2,403 were technical employees, and 543 of them were in engineer classifications (92 were graduate engineers).

Department salaries compare well with the average among states. Entrance pay for civil engineers is $5,268; the deputy secretary-chief engineer has a $16,170 salary.

Pennsylvania stands third among the states in population, fourth in motor vehicle registrations, fifth in 1957 highway construction awards and first in maintenance expenditures. It leads in total number of highway employees and also in number of maintenance workers on highway department payrolls. It ranks seventh in number of technical employees and eleventh in personnel classified as engineers, according to the appraisal of the Automotive Safety Foundation.

increased emphasis on attendance at national and regional highway engineering and research conferences by department representatives.

5. Urban Problems

"Management machinery is needed which will step up and coordinate city planning, including the role of state highways in urban development."

On this point, the report calls on the legislature to determine whether cities should share in the cost of urban state highway construction.

An "Urban Coordinator" is suggested as a newly created staff position, and engineers experienced in urban planning are suggested for assignment to districts where urban projects are a large part of the highway work.

The highway department is advised to take active part in local planning activities as a way to keep informed.

6. Planning, Programing

From the legislative side, says the report, the highway department ought to be directed to examine every road and street in the state and recommend a classification scheme. And the legislature further should initiate appraisals of total needs and of the distribution of finances to meet those needs.

From the administrative angle, the department itself ought to establish the state's long-range highway needs, both physical and financial—without legislative directive. From these needs annual construction programs can be developed. And the programs developed, after thorough checking and coordination for orderliness and feasibility within budget limitations, should be publicized to get maximum support.

7. Who Handles Design?

The study raises the moot question of how much engineering ought to go to consultants. For Pennsylvania it recommends that the highway department take over more of the design work now done under contract with private consulting firms. Consultants should be retained to do any work beyond the capabilities of the department, it recommends.

A "contract engineer board" (existing in Pennsylvania) should be retained to decide what work needs to be assigned to consultants, which consultants are to be engaged, and at what contract terms.

Design can be simplified by standards that designate general treatment of intersections, typical roadway cross-section, base and pavement types, standard structures and degree of access

Further, the preparation of contract drawings for widening, resurfacing and reconstruction on existing alignment can be discontinued. Bids can be taken for such work on a typical cross-section and center-line profile.

8. Right-of-Way Procedures

Legal machinery and funds are the key to land acquisition. To simplify the problem, the report advises:

- Authorize the highway department to acquire land by purchase, gift or other means—as well as by condemnation.
- Authorize a revolving fund for financing acquisition.

9. Construction Supervision

ASF's report has no quarrel with contractors or the quality of construction.

But it does point out such construction problems as the shortage of supervisors and inspectors, the delays due to change orders and extra work, the delays in right-of-way acquisition and delays in final settlements with contractors.

To correct one of these problems, it is recommended that field forces for supervision of construction be reorganized to even out the work load.

Prequalification of bidders is suggested.

On payments to contractors, the report proposes increasing field forces to speed up final quantity estimates, minimizing retainages and paying for materials as delivered to jobsites.

10. Traffic Engineering

A great opportunity for highway department service is seen in the traffic engineering field.

Leadership and coordination can be offered local authorities by the state agency to help solve problems in accident recording, signing, signals, speed zoning, parking and pavement markings.

It is recommended that the director of highways have full control of traffic engineering on rural state roads and that he act with municipal governments in effecting traffic control measures within their jurisdictions.

A Traffic Engineering Bureau is recommended directly under the department's deputy for engineering.

Big Money for A-Power Plants

A big increase in construction of commercial-sized atomic power plants looks like a good bet as a result of two disclosures this week in Washington.

- The Atomic Energy Commission announced the first successful use of plutonium as fuel in a power reactor.
- The Joint Congressional Committee on Atomic Energy unwrapped an $875 million program for making nuclear power competitive by 1970.

Plutonium is the hope of AEC officials to eventually lower the cost of atomic power. Reactors now are fueled with fissionable uranium, which makes up less than 1% of natural uranium. Plutonium is produced from the more plentiful nonfissionable isotopes. Commercial use of plutonium is not feasible yet, but the new development is a major technical breakthrough.

AEC backing for some such construction program as the one now proposed has been urged without success by the joint Congressional Committee for the last couple of years. Now that Lewis Strauss has been replaced by John McCone as AEC chairman, those behind the program see a better chance of getting it adopted.

The program would involve construction of 10 or 12 reactors with total capacity of some 1 million kw. Private industry would have a key role—but under different ground rules from the present "partnerships" power-demonstration program.

In unveiling the proposals, Rep. Carl Durham (D., N. C.) and Sen. Clinton P. Anderson (D., N. M.)—joint committee chairman and vice chairman, respectively—made it clear the program is only a "staff study" so far. However, there is no doubt that it represents the thinking of key committee members. It is understood also the proposals meet with the approval of the AEC majority. The joint committee is inviting industry views at a seminar this fall.

Objectives of the program, as set forth in the draft statement, are to demonstrate economic nuclear power in the U. S. by 1970 and in high-cost free-world nations by 1968.

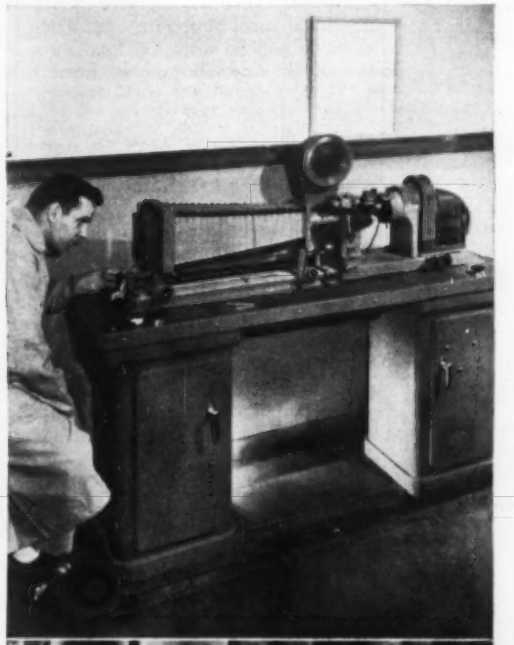
This would be accomplished by a stepped-up research and development program.

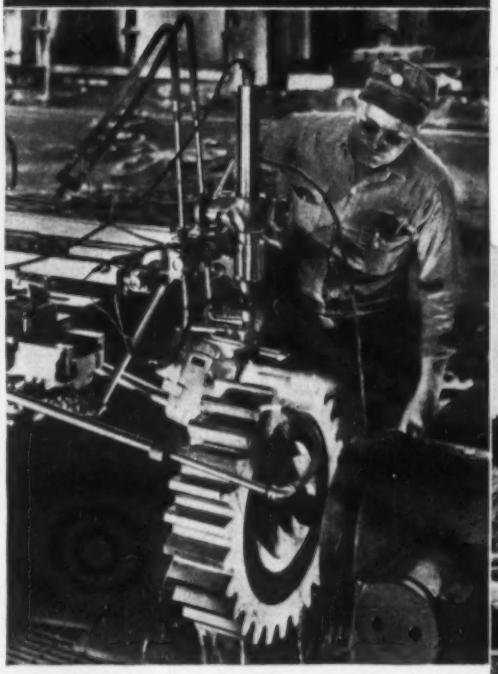
Construction costs are estimated at $500 per kilowatt, or a probable total of $500 million. Associated design and developments costs are expected to run another $375 million.

Thus, on a seven year basis, costs would average $125 million per year. However, this figure represents both government and private spending. AEC, in addition, would continue its base program of general reactor research and development at an average of $125 to $150 million annually.

These People Make Your Machine LIVE LONGER . . . WORK HARDER

The structures and physical properties of all metals used in Bucyrus-Erie machines and replacement parts are important factors in their strength and durability. Here, a metallographic microscope is being used to check the structure of a sample of metal.





Bucyrus-Erie Company spends many thousands of dollars every year testing and developing materials for better wearing qualities under *specific* types of service.

When new metals are employed for better results, and new machinery components are developed, they are passed on to you through the Bucyrus-Erie field service organization—wherever you work.

Every replacement part supplied to you by Bucyrus-Erie is made to original equipment specifications— *or better*, if new developments have been achieved. The kind of experience found in Bucyrus-Erie's engineering staff and testing laboratories cannot be duplicated by "will fit experts" *anywhere*.

To keep your machine alive longer, keep it working more profitably, call on the people who designed and built it—call on BUCYRUS-ERIE. JM58

BUCYRUS ERIE

A Familiar Sign at Scenes of Progress

BUCYRUS-ERIE COMPANY • SOUTH MILWAUKEE, WISCONSIN

Gears and pinions which are subjected to hard usage are carefully flame-hardened to provide long life and extra wearing qualities, extra hardness where drive teeth mesh.

In the Orinoco region of Venezuela, where this Bucyrus-Erie 190-B shovel is loading iron ore, dependability is vital. In remote areas especially there's no place for the "will fit expert".

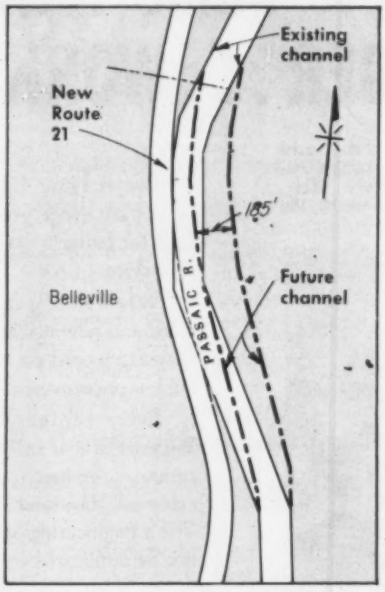
River, Go Way From My Road

The Passaic River in northern New Jersey is being moved over 80 ft to the east to make way for a new interstate highway. Shifting the river will require dredging 190,000 cu yd of soil that will be used to fill 25 acres of swampland adjoining the new route and the existing Bergen County park.

An additional 1.9 acres of land were acquired in developing the project.

The freeway right-of-way lies along a strip of land between the Passaic River and River Road on the west bank. At two points (one is shown in drawing), the freeway encroaches upon the river, making relocation of some 3,800 ft of shipping channel necessary. The project will take some bends out of the 300 ft wide navigable inland waterway and allow better road alignment.

The 1.3 mile long highway section including the river shift is being undertaken by George M. Brewster of Bogota, N. J., under a $2.8 million contract with the state highway department.



Itschner Urges Water Planning

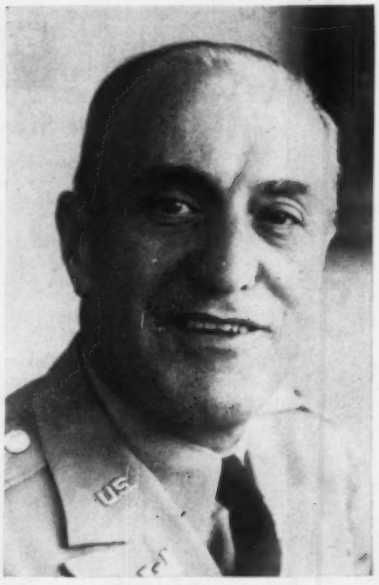
The Army's chief of engineers last week called for more water-resources planning at all levels. He also said those who benefit from federal projects should help pay for them.

Maj. Gen. Emerson C. Itschner told an audience at the Illinois Chamber of Commerce's one-day water conference in Chicago, "Our basic laws still do not adequately provide for the important function of supplementing the flows of streams in times of drought." He urged the immediate start of intense, broad and integrated action at federal, state and local levels to re-evaluate our long-range water requirements and to meet them.

Speaking on what he called the ever-present question of "who pays," General Itschner said: "When the benefits of federal projects are in fact general, widespread and nonexclusive, the cost may be borne by the federal government; but when benefits serve specific and identifiable municipalities, industries and other users, those users should pay their share of the cost."

General Itschner told his audience that Corps reservoirs supply municipal water needs to 38 cities. And conservation and flood-control projects on our major rivers, he said, prevent an average annual flood damage of at least $600 million per year.

For future needs, General Itschner called for modernizing and extending our inland waterways. The time will come, he said, when there will be ample justification for providing twin locks on the St. Lawrence Seaway, completing the Mississippi Valley inland navigation system with twin locks on the Illinois, and completing channel extensions already begun on the Missouri and Arkansas Rivers.



General Itschner

Another speaker at the one-day conference, Blucher A. Poole, technical secretary of the Indiana Stream Pollution Control Board, told the conferees that public apathy was the primary deterrent to a clean water program. Costs are a second serious roadblock, he said.

Billboard Control

Rules proposed for states that want to get extra aid

The Commerce Department has laid down a proposed set of rules that states must follow in controlling billboards along new interstate highways if they want to get a cash bonus equal to one-half of one per cent of the cost of building the roads.

Opposition to the regulations can be registered until September 29. Then, a decision will be made on final form of the regulations. States have until July 1, 1961, to decide if they want to go along with billboard control. It applies only to the approximately 75% of the 41,000 mile interstate net being built on new locations, right-of-way acquired after July 1, 1956.

If a state chooses to go along with the federal government in restricting signs along the new highways, it must acquire control to bar such signs along a 660 ft corridor alongside the highway right-of-way. The federal government will foot the same amount of the cost of control of signs along this corridor as it does on the construction of the highway—normally, 90% federal, 10% state.

Here is how the government wants to limit signs along the new roads:

- **Official signs** directing traffic can be located anywhere.
- **No commercial signs** will be allowed on the right-of-way.
- **On premise signs**, advertising the sale or lease of property, or describing the activity of a facility, can be erected adjacent to the right-of-way, but only one such sign is allowed.
- **Advertising signs** can be located within 12 air miles of a commercial establishment, subject to these conditions: No signs can be located within two miles of an intersection; no more than six signs can be located within five miles of an intersection; no more than two of these signs can be placed in a one mile area, with all signs at least 1,000 ft apart. In the remainder of the 12 mile sector, signs must be at least one mile apart.

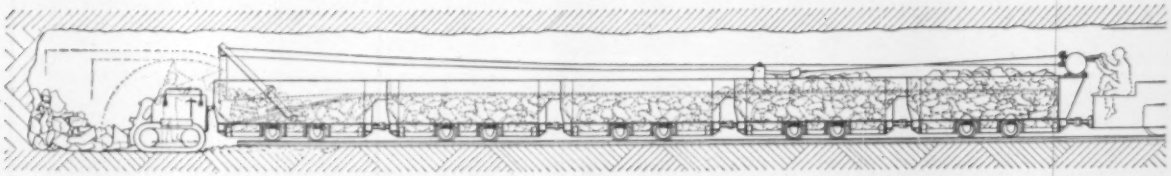
Size of signs cannot be higher than 10 ft, nor larger than 60 sq ft in total area. This is less than one-fifth the size of most billboards today. The signs can be illuminated with a white light, but it cannot flicker or alternate on and off. No animation is allowed on the sign.

Trade names and brand names on the signs must not be larger than the name of the establishment where the product is for sale. And an establishment can only erect one sign.

These signs will be located off highway rights-of-way, but anywhere within

(*Continued on page 32*)

NEW S-D SLUSHER-TRAIN Promises You Tremendous Savings in Tunnel Driving



Here is what you have: (1) Equipment — Loader, S-D Slusher-Train and locomotive. (2) Men — only two . . . the loader operator and the S-D Slusher-Train operator, who becomes motorman when S-D Slusher-Train is in transit. Train is made up of S-D Automatic Bottom Dumping cars of any required number to give you the capacity to hold an entire round. Cars are not dumped until round is mucked-out and ready for next operation, drilling or timbering. There is no car switching, and no extra men required. Cars feature S-D exclusive overlapping ends. Slusher-Scraper loads across overlapping ends in same manner as if train was but one car of the length necessary to haul entire round.

"High-Ball-it" Speed and Safety Will Save You Days . . . Weeks of Time and Costs in Completing Jobs, based on today's Methods

There is no method that can match the S-D Slusher-Train in speed. You can figure on mucking out 1 to 1½ tons a minute. S-D Slusher-Train moves into face and remains stationary until entire round is mucked-out. Train is dumped by means of simple S-D automatic tripping and closing devices. In large tunnels, a series of two or more S-D Slusher-Trains may operate side-by-side with muckers to load out a round at the rate of several tons a minute. You obtain high speed mucking with less equipment, requiring less maintenance and fewer men. You get the rock out faster so you can start drilling again — saving days, sometimes weeks with fewer men in driving tunnels . . . obtaining tremendous savings in man-hours, maintenance and job-time!

S-D SLUSHER-TRAIN AND S-D GISMO® FEATURED AT SAN FRANCISCO MINING SHOW SEPT. 22-25

If you are attending the Mining Show at San Francisco Sept. 22-25, our Booth 840 offers you an excellent opportunity to investigate the large savings available to you by operating with S-D SLUSHER-TRAINS . . . S-D GISMO . . . and new S-D GISMO TRANSLOADER.

The Gismo equipment offers you a self-loading transport . . . eliminating rehandling! Complete information is available by writing the manufacturer,

SANFORD-DAY IRON WORKS, INC.
KNOXVILLE, TENN.

SANFORD-DAY

KNOXVILLE, TENNESSEE

- S-D Mine Cars, all types and kinds.
- Precision S-D Mine Wheels.
- Tough, year-after-year wheel service by special S-D wheel Hard-Facing Process (this can really save you money and eliminate downtime).
- S-D "Brownie" Hoists.
- S-D Car Spotters, all types, including special drop bottom car spotters.
- S-D Mine Sheaves and Rollers.
- S-D Automatic Loading Stations for Mine Car and Railroad Car Loading points.
- S-D Slusher-Trains for mining and construction industries.
- S-D Gismo and Transloaders for mining and construction industries.

Please forward complete information and data on S-D Slusher-Train and S-D Gismo equipment.

NAME_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____

Put trench spoil off the road —the 80W will pull it back

Keep traffic lanes clear, put your spoil off the pavement. The Cleveland 80W backfiller pulls spoil from opposite side of trench, backfills *toward* itself, works parallel to trench and to traffic.

As it backfills, the 80W simultaneously compacts fill, the right way, from the bottom up. Leaves no voids around pipe—no settling, now *or* later.

Result: a clean, safe, *completed* job.

The 80W backfills *away from* itself, too. Stays off lawns, sidewalks and completed work.

Fits *all* job conditions.

The CLEVELAND TRENCHER Co.

20100 ST. CLAIR AVE. • CLEVELAND 17, OHIO

Good Everywhere ®

the 660 ft parallel corridor. Locations must be so arranged so that only motorists traveling in one direction can read them.

Signs in the specific interest of the traveling public can be located on the highway right-of-way along the new roads. Generally, this is for such things as places of historic interest, camping sites, lodging, eating and vehicle service sites. Trade and brand names will be allowed on these signs if they identify the type of service available.

Rather than have individual signs to direct the public, states can set up information sites along the new highways. It is left up to the individual state whether these will actually be on or off of the highway right-of-way. Location of information sites, however, will be determined by both the Secretary of Commerce and the state.

These information sites, which will be alongside the highway, probably will be combined with rest areas. The information signs will not be readable from the highway itself; motorists would have to pull into the area to read them.

Where information sites are provided, signs must be placed in groups on large panels, no larger than 13 ft high and 25 ft long. Individual signs will be no bigger than 12 sq ft in area.

Where information sites are provided within 12 miles of commercial establishments, no individual billboards will be allowed. And, if the sites are within 30 miles of historic points, then no individual signs of this nature will be put up.

The matter of selling advertising space on billboards is left up to each state to resolve.

Design Contest Announced For Steel Highway Bridges

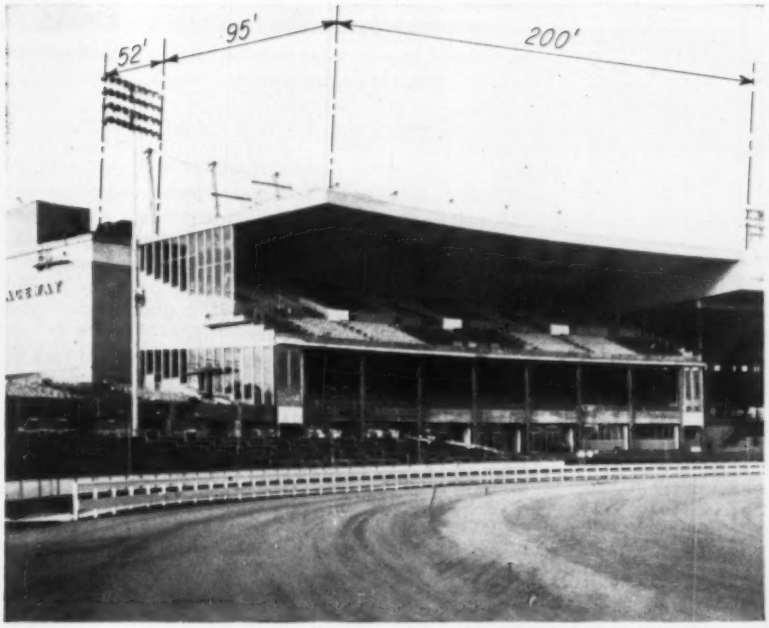
American Bridge Division of United States Steel Corp. is offering 15 awards totaling $44,000 for the best designs of steel highway bridges. The competition will be administered by the American Institute of Steel Construction.

Open to engineers and engineering students, the competition poses the problem of designing an overpass in steel to carry a two-lane road over a four-lane interstate highway. Top award in the contest is $15,000 for professionals, $4,000 for students.

It closes May 31, 1959. A jury composed of 17 architects and engineers, under the chairmanship of L. Abbett Post, AISC executive vice-president, will select the winners.

Additional information can be obtained from American Bridge, 525 William Penn Place, Pittsburgh 30, Pa., or the AISC, 101 Park Ave., New York 17, N. Y.

Cable-Hung Roof Goes to the Races



UPLIFT AT ANCHORS, 52 ft behind masts, was disregarded in building design.

A cable-suspended roof protects the grandstand portion of a new $9 million clubhouse at Yonkers Raceway, Yonkers, N. Y. The 200 ft long roof juts out 95 ft over 4,000 seats of grandstand and dining terraces. It's all part of a $17.5 million rebuilding program going on at the track.

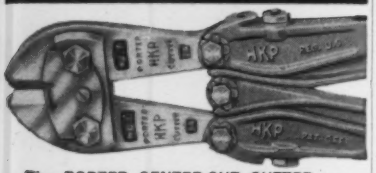
It's believed to be the first time cable-supported structures have been used in grandstand construction. The structure also has a combination of design elements from other fields.

Fans who drove to the August opening of the Yonkers racing season parked in a new 3,000 car "parkadrome" next to the clubhouse. Those arriving by bus got off right in the basement of the clubhouse.

The stands provide two tiers of seats and dining areas, which can be reached from four levels within the clubhouse. All floors are connected by moving stairs and elevators.

Huge sandwich windows of glass-plastic-glass protect the lower stand level of dining terraces. In good weather, they are lowered into a deep trench at

THERE'S A

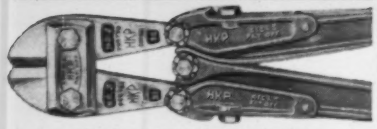


The PORTER CENTER-CUT CUTTER — In 6 sizes, for cutting up to ¾". Our most popular tool. Ideal for general free cutting of soft and medium hard steel. Other models for HARDER METALS.

HKP®
PORTER
CUTTER

The PORTER WORK-STATION CUTTER — In 3 sizes, up to ½" capacity. For continuous cutting operations it can increase the metal-cutting capacities of one man up to 300%! Saves time, work, money! Leaves one hand free to feed or hold material.

FOR EVERY



The PORTER HEAVY DUTY CUTTER — in 3 sizes, up to ¾" capacity. Specially designed for those rugged jobs in steel mills, construction companies and other heavy industries!

METAL
CUTTING
JOB

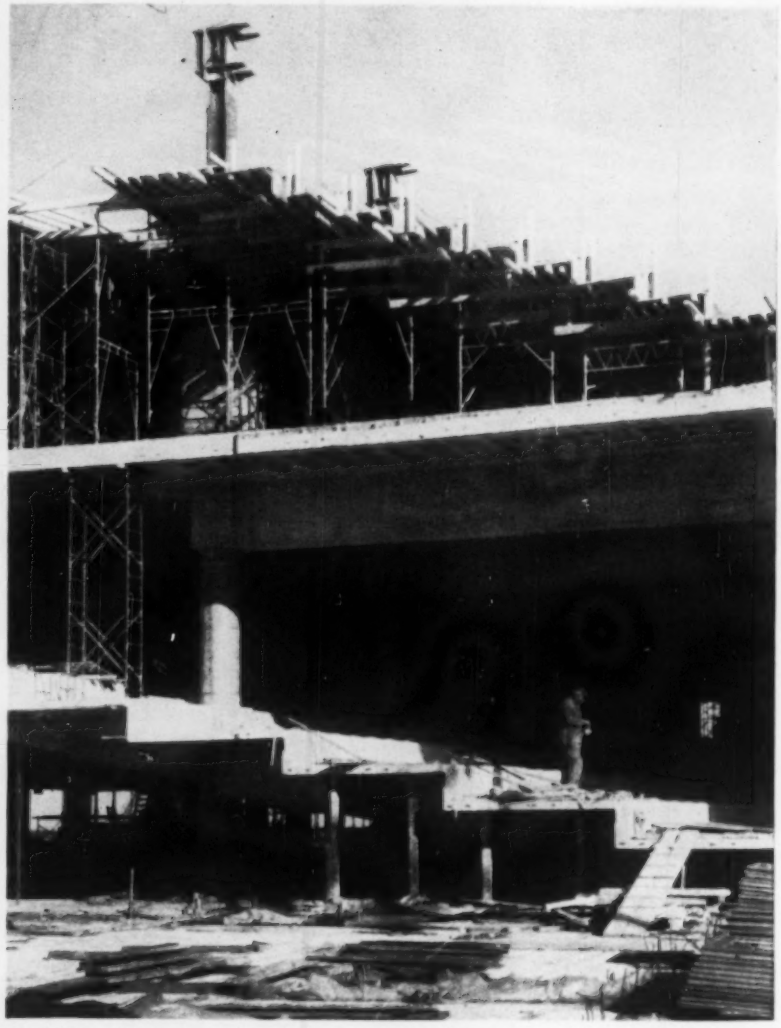
SAVE TIME AND MONEY!
Over 100 Cutters in Various Sizes and Types — Hand or Power Operated

Contact your Industrial Distributor or write direct for your FREE CATALOG!

CUT — up to ¾" rods with HAND OPERATED TOOLS up to 1⅜" rods and 2½" power cable with POWER OPERATED TOOLS.

H. K. PORTER, inc.
Somerville 43, Mass.

. . . The roof design is a combination



COLUMN TOPS were designed to carry masts and front roof girders. Roof box girders, added later, sit in forked steel plate seats; connections are welded.

the front of the grandstand. The mullions between the window panels drop into the same trench.

The roof design includes techniques normal to suspension bridges as well as some techniques from the field of post-tensioned concrete.

At the back of the stands, eight steel columns, 28 ft apart, rise through the clubhouse structure to roof level, where they support steel masts. The masts are 35 ft high and carry cables that extend from eight 95 ft long steel box girders, over mast-top saddles, to anchors at the top rear of the four-story reinforced concrete clubhouse. The columns are capped with rocker plates for the masts and are equipped with steel-plate seats for the roof girders. The masts cant backward a total of five feet.

Steel purlins, spaced 7 ft apart, support a precast concrete plank forming the roof deck. The purlins span 28 ft between the roof girders.

Roof construction began last April after most of the concrete clubhouse had been completed. For each box girder, twin scaffold towers were built up from the clubhouse decks. They were located at cable attachment points. Scaffold-base jacks allowed fine adjustment of the girders when they were erected.

The 95 ft girders are each built up of two 27WF94s, spaced 18 in. apart, with ⅜ in. cover plates welded top and bottom. They weigh just over 10 tons each and were trucked to the job in one piece and hoisted into place by a crawler crane equipped with a 110 ft boom.

At the rear, they were placed in the seats on the front of the steel columns; at the front, they rested on the temporary scaffolding. Masts and the diagonal wire bracing between them

46 years old and still in service

This 60-in.-ID steel water main, photographed a few months ago, was installed in 1912. It has been in constant service for 46 years delivering raw water to Denver, Colorado. In the words of the Water Department: "This pipe is in very good condition and is still giving satisfactory service."

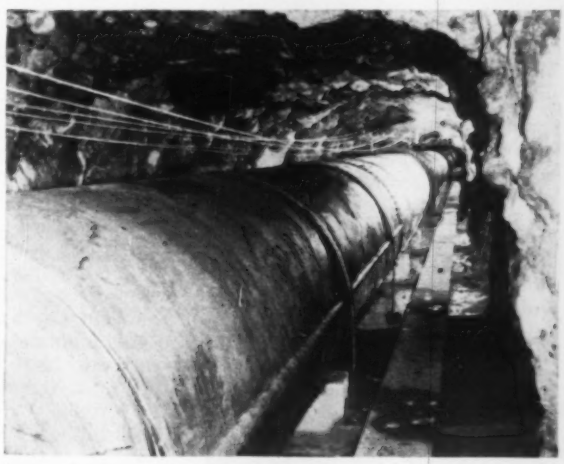
The 1111-ft main is of lockbar construction, fabricated from 3/8-in. plates, with an Ovarco lining. Its exterior was originally coated with an asphalt paint, and the exposed portion shown here has been re-painted from time to time. About 700 ft of the main extends through a tunnel, while the elevated section shown above spans the South Platte River.

20° below to 100° above — The temperature range of the atmosphere is roughly 120 deg, while the water itself varies from 32.5 to about 70 deg. This has caused no difficulties. As the Water Department states: "Steel pipe does not require any protection from temperature extremes."

Through the years Denver has installed about 17 miles of large-diameter tar-enameled steel pipe for the city's pipe system, as well as many more miles for its collection conduits across the Continental Divide.

Every length is tested — There's no guesswork with steel water pipe. Every length is hydrostatically tested in the shop according to AWWA specifications, ordinarily to twice the working pressure! There's no other pipe so strong, so reliable under all service conditions, as tar-enameled steel pipe.

Let us quote on your next project.



BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation.

BETHLEHEM STEEL

BETHLEHEM STEEL

Proved Cost Saver

CURE and SEAL CONCRETE WITH 1 PRODUCT

THOMPSON'S WATER SEAL

Eliminates wet sacks, papers, hosing and spraying

Spray deep penetrating, colorless Thompson's Water Seal on fresh concrete to cure and seal in one operation. Save time . . . save labor.

Effectively controls moisture loss for 28 days and beyond.

Assures uniform curing even in hot, dry weather.

Helps reduce checking, cracking, spalling.

Produces harder, dust-free surface.

Eliminates waterproofing concrete floors.

Permits adequate time for smooth troweling.

Send for technical bulletin and Contractors Case History file.

A proved bond breaker for pre-cast, tilt up and lift slab construction. Permits easy, clean separation of slabs, walls, pre-cast members.

Available in 5 and 55 gallon drums from building supply stores, paint and hardware dealers.

4932

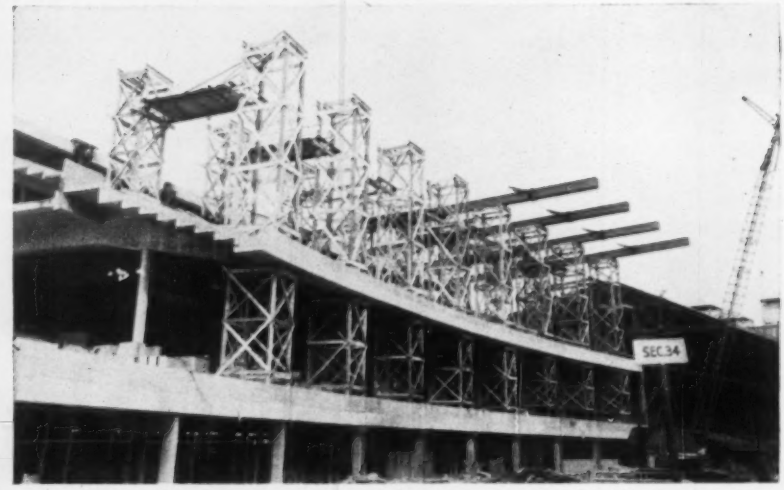
Thompson's

MANUFACTURERS OF FINE PROTECTIVE CHEMICALS SINCE 1929

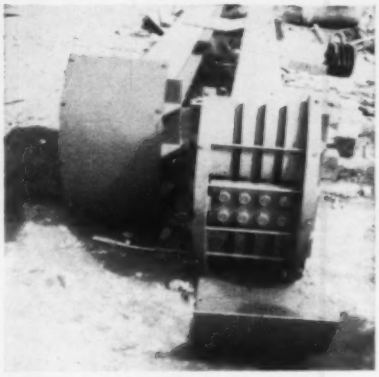
E. A. Thompson Co., Inc., Merchandise Mart, San Francisco 3, California

San Francisco • Los Angeles • San Diego • Portland • Chicago • Seattle • Denver • Dallas Houston • St. Louis • St. Paul • Detroit • Philadelphia • New York City • Memphis • Cleveland • Factory: King City, California

. . . Cable sockets are made to order.



EIGHT 10 TON GIRDERS were erected by crawler crane with 110 ft boom. Outer strand anchors start 16 ft from girder ends, inner anchors 39 ft farther back.



MAST SADDLE clamps were bolted over strands before tensioning.

MAST BASES were bolted, then released before strand tensioning to form pivot foot.

came next. Each mast was locked in place when first erected by anchor bolts at its base. Until the roof suspendors were placed, the masts functioned as rigid members.

Pre-stretched galvanized bridge strand was strung over the saddles and taken to the anchorages. Two outer strands were attached on each girder, 16 ft from the front; one inner strand was anchored 39 ft farther back. The strands were anchored 26 ft and 52 ft behind the masts. When the strands were ready for tensioning with anchor nuts taken up hand-tight, they were clamped permanently in the mast-top saddles. Mast-base anchor bolts then were released, allowing the bases to serve as pin connections in the final structure.

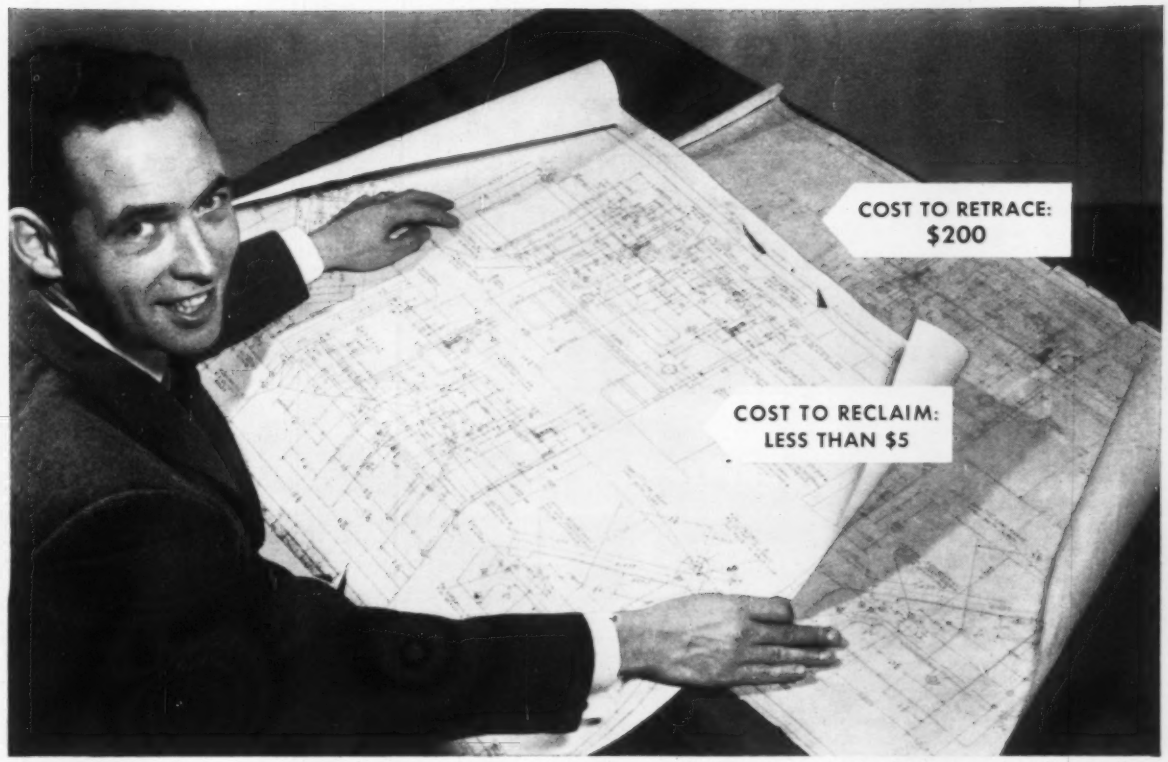
Each strand was tensioned from both ends at once with 100 ton capacity hydraulic jacks. The inner strands were loaded first, then the outer pairs. Dead load on each single inner strand is 68,000 lb; outer strands carry a 52,000 lb load.

Cable ends are held in 6 in. dia. sockets made especially for the job. These sockets are threaded outside and inside.

For the stressing operation, jacks, were screwed into the inner socket threads. When the strands were loaded, two nuts screwed on the outer threads were taken up and tightened against the anchor plates.

Architect for the Yonkers Raceway is Lionel K. Levy; Jacob Feld is the structural engineer—both are from New York City. Yonkers Contracting Co., Inc., is the general contractor. Klevens Corp. of Yonkers was the steel contractor.

The masts, complete with bases and saddles, were made by the New York Engineering Co. Strands and fittings for the suspension system were supplied by John A. Roebling's Sons Corp. of Trenton, N. J.



Kodagraph Autopositive Paper strengthens line detail, drops out stains—turns old drawings into new ones.

Saved: $195 in Redrafting costs by making a Kodagraph Autopositive Paper intermediate

BEFORE you retrace another soiled or weak line drawing ask your print room or local blueprinter to figure the cost of making a Kodagraph Autopositive Paper intermediate.

The saving in dollars, even with the smallest drawing, is reason enough to end the retracing chore for good. The line detail on an Autopositive intermediate, unlike a pencil drawing's, won't smudge or smear when it's pulled from the files . . . will remain legible even after being used hundreds of times for reference or printmaking.

The smartest move, of course, is to make an Autopositive Paper intermediate of every drawing in your active files. Use these for all reference work and printmaking. This way you'll protect your valuable originals, and get top-quality prints time after time.

FREE: Write today for your copy of "New techniques . . . new savings with Kodagraph Reproduction Materials." Jam-packed with valuable tips on saving drafting time, protecting drawings, getting better prints.

EASTMAN KODAK COMPANY
Graphic Reproduction Division, Rochester 4, N.Y.

Kodagraph
Reproduction Materials

MAIL COUPON FOR FREE BOOKLET

EASTMAN KODAK COMPANY
Graphic Reproduction Division,
Rochester 4, N.Y.
Gentlemen: Send me a free copy of your booklet on Kodagraph Reproduction Materials.

67-9

Name _____

Position _____

Company _____

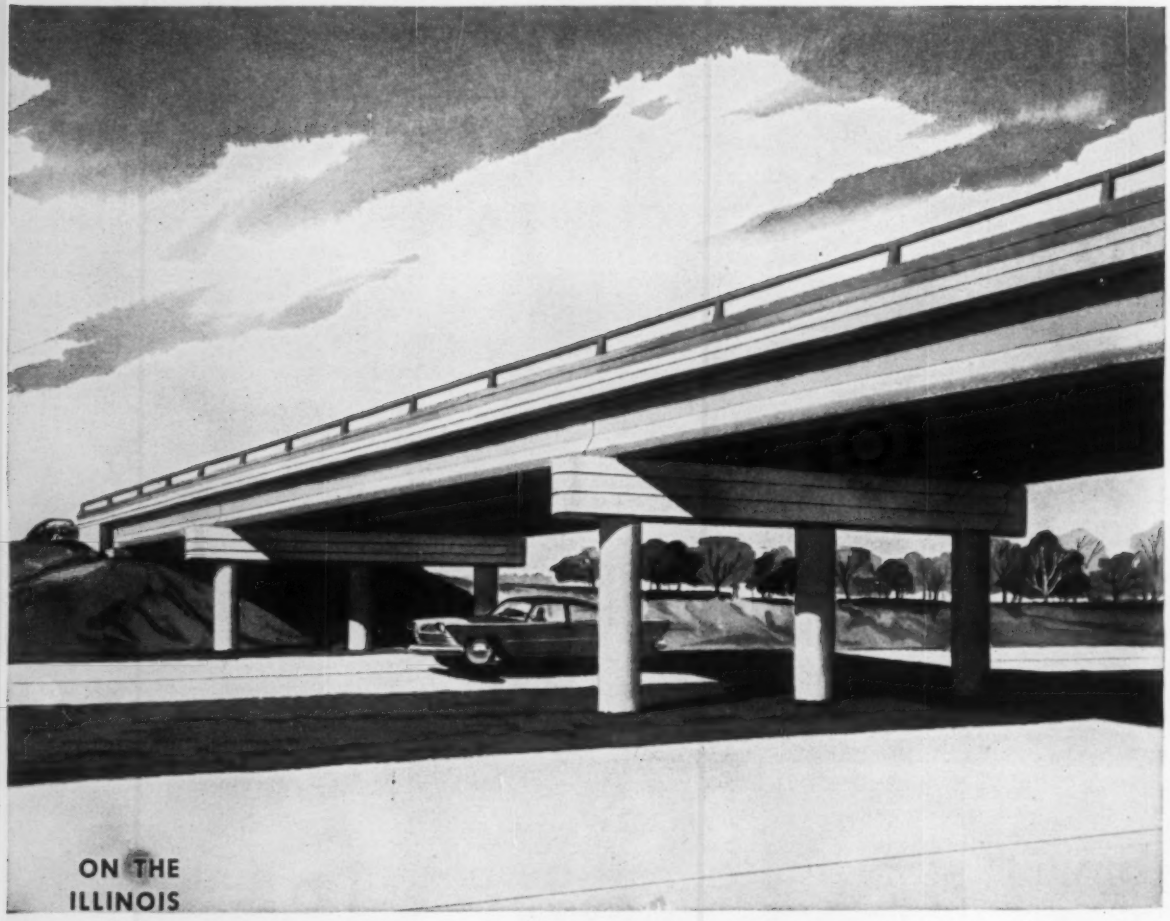
Street _____

City _____ Zone _____

State _____

Kodak
TRADE-MARK

WHEN AMERICA BUILDS FOR ECONOMY... IT BUILDS WITH CONCRETE



ON THE ILLINOIS TOLL HIGHWAYS . . .

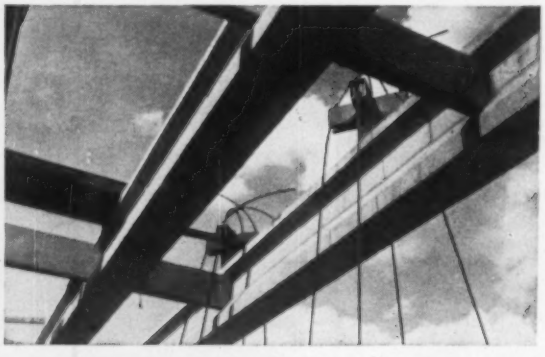
precast, prestressed concrete for bridges will reduce costs $4,000,000

A full-scale test bridge showed engineers new ways to cut costs. 218 more prestressed bridges will follow . . . at savings that make every fifth bridge free!

Engineers found big economy when they checked prestressed concrete for bridges on Illinois Toll Highways. They're cutting approximately $4,000,000 from original estimated costs—with no sacrifice of strength or durability.

This is a mass production job, the biggest yet of its kind. Designs are standardized. Prestressed stringers are being produced in casting yards to achieve top economy and uniformly high quality. All this enables contractors to meet road opening schedules with resultant financing economies.

Whether the job calls for hundreds of bridges or just a few, savings really add up with prestressed concrete. And savings are just starting! Maintenance costs will be the lowest known on any major bridge system. That's why you'll be seeing more such modern bridges as Interstate System construction moves ahead.

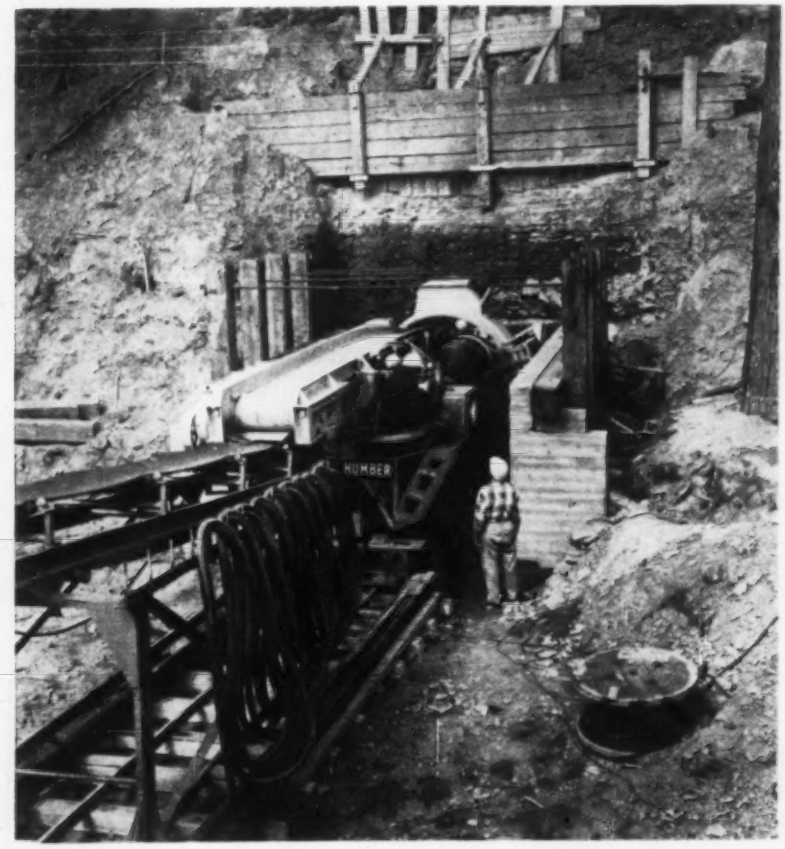


Beverly Road test bridge. Tests proved value of prestressed concrete for economical highway bridges.

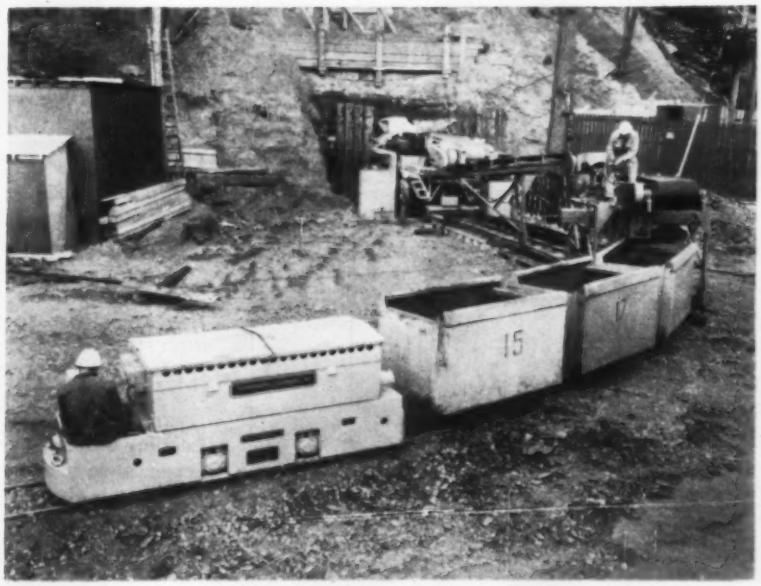
PORTLAND CEMENT ASSOCIATION
612 Merchants Bank Bldg., Indianapolis 4, Ind.
111 W. Washington St., Chicago 2, Ill. • 50 W. Broad St., Columbus 15, Ohio
A national organization to improve and extend the uses of concrete

FOR STRUCTURES... MODERN **concrete**

Tunneling Machine Tackles Hard Rock



ROTARY CUTTER HEAD at front of 25 ft long tunneling machine will chew through 11 ft dia face of hard shale and limestone for a sewer in Toronto.



MUCK is belt-conveyed to mine cars behind digging unit. Use of tunneling machine stemmed from prohibition on blasting in 50 to 100 ft deep tunnel through builtup area.

An 11 ft dia tunnel in Toronto, Canada, is being chewed out of hard shale and limestone by a machine reminiscent of "The Mole" used at Oahe Dam. The Canadian machine is much smaller, 25 ft long compared to 72 ft, but it is boring hard rock rather than the soft Pierre shale at Oahe (ENR Apr. 18, 1957, p. 28). Both machines were designed by James S. Robbins of Orillia, Ontario.

Conventional blast hole drilling and shooting were forbidden on the Toronto job. The Municipality of Metropolitan Toronto did not want residents or adjacent foundations and utilities disturbed.

The tunnel will serve as a sewer. It's located between 50 ft and 100 ft below the street surface for most of its 11,500 ft length. The route is mainly aligned with the street centerlines to keep as far as possible from foundations.

The contractor, Foundation Company of Ontario, and Mr. Robbins designed a circular drilling unit that is working the 10 ft 9 in. dia bore full face. It weighs 60 tons. Two 200 hp electric motors drive the unit, which is called "Foundation Humber" (the tunnel extends beneath the Humber River).

Midway along the machine's length are gripping arms that press against the tunnel walls to hold the unit stationary. A horizontal shaft rotated by a powerful gear box is thrust forward. The shaft turns the entire face of the machine, in which cutting disks are mounted.

As the rock face crumbles, buckets immediately behind the cutting disks pick up the loosened rock and pass it along an overhead conveyor. The conveyor carries the muck over the back of the machine to a mine-type train. Each train consists of 10 cars; each carries 3 cu yd of excavated material.

The job is only several hundred feet along now. The tunnel will be lined with 12 in. of concrete. Concrete will be placed through 10 in. vertical shafts that have been sunk all along the route. Air pressure will be used to force the concrete down into the deep tunnel. These same vertical holes also are being used to ventilate the work area during construction. The tunnel will be dug from three adits cut into the west bank of the Humber River. Only one of the adits has been excavated.

Convenient dumping areas for the muck were found near the adits, along the banks of the Humber River which were severely damaged during a recent hurricane.

Cost of the Humber Valley trunk sewer will run to $3.6 million.

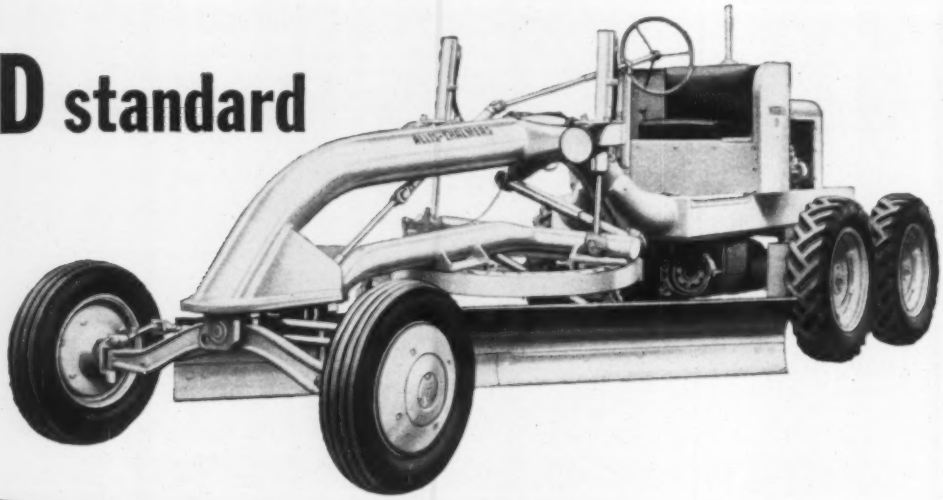
...for big economy on maintenance

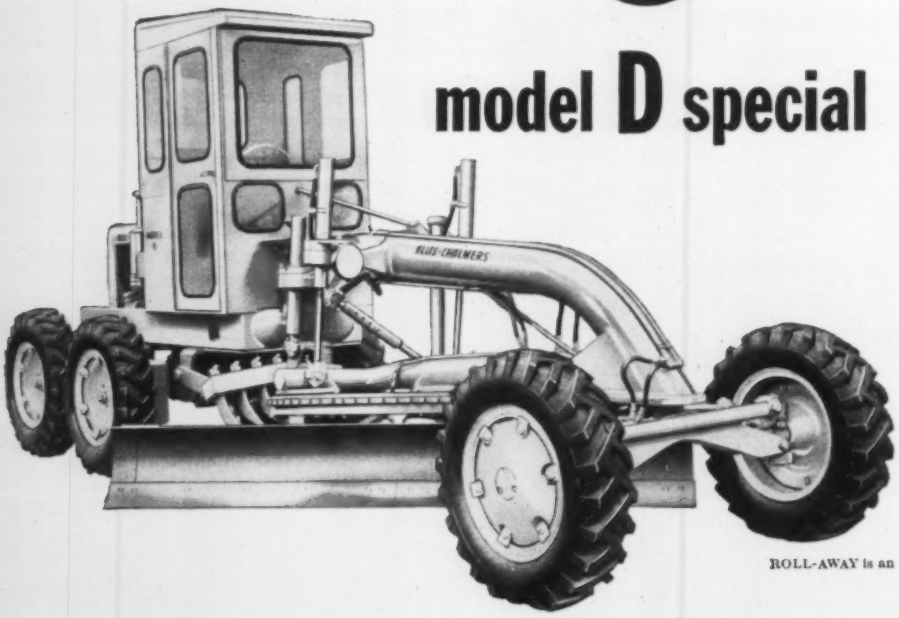
GET THE ALLIS-CHALMERS

Here's the original low-cost motor grader with big-grader design and performance advantages. The Model D handles so many jobs so well, you have to see it at work to convince yourself. Your Allis-Chalmers dealer can arrange a demonstration. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wisconsin.

model D standard

50 hp
Approx. weight
8,800 lb (gasoline)
Approx. weight
9,350 lb (diesel)





model D special

50 hp
Approx. weight
10,900 lb (gasoline)
Approx. weight
11,450 lb (diesel)
4 forward speeds to 25 mph (approx.)
1 reverse speed to 3 mph (approx.)
All-steel cab*
Shiftable moldboard*
Hydraulic scarifier*
Leaning front wheels*
Power circle turn*

*Also available with the model D standard as optional equipment.

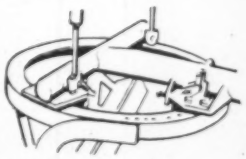
ROLL-AWAY is an Allis-Chalmers trademark.

and construction work

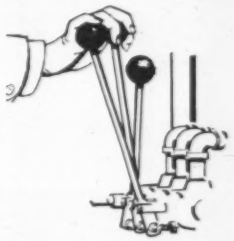
MODEL D MOTOR GRADER

many production-boosting advantages

The ROLL-AWAY moldboard rolls dirt up and ahead to eliminate packing, reducing friction . . . gives you more performance per horsepower, more production per gallon of fuel.



Revolving circle and heavy tubular drawbar provide exceptionally stable moldboard mounting.

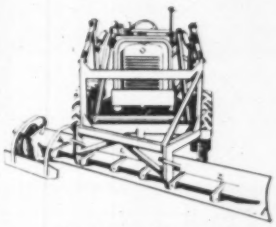


Convenient hydraulic controls, easy to operate. Two levers fit into one hand to control circle lift.

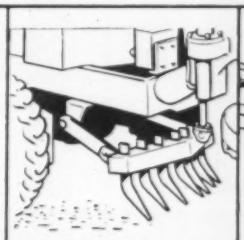
Positive tandem drive gives you four driving wheels under the heavy end of the grader.

many job-multiplying attachments

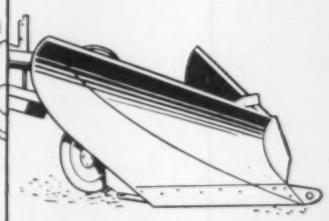
⅝-yd rear-mounted loader



Interchangeable shoulder maintainer



Midship-mounted scarifier

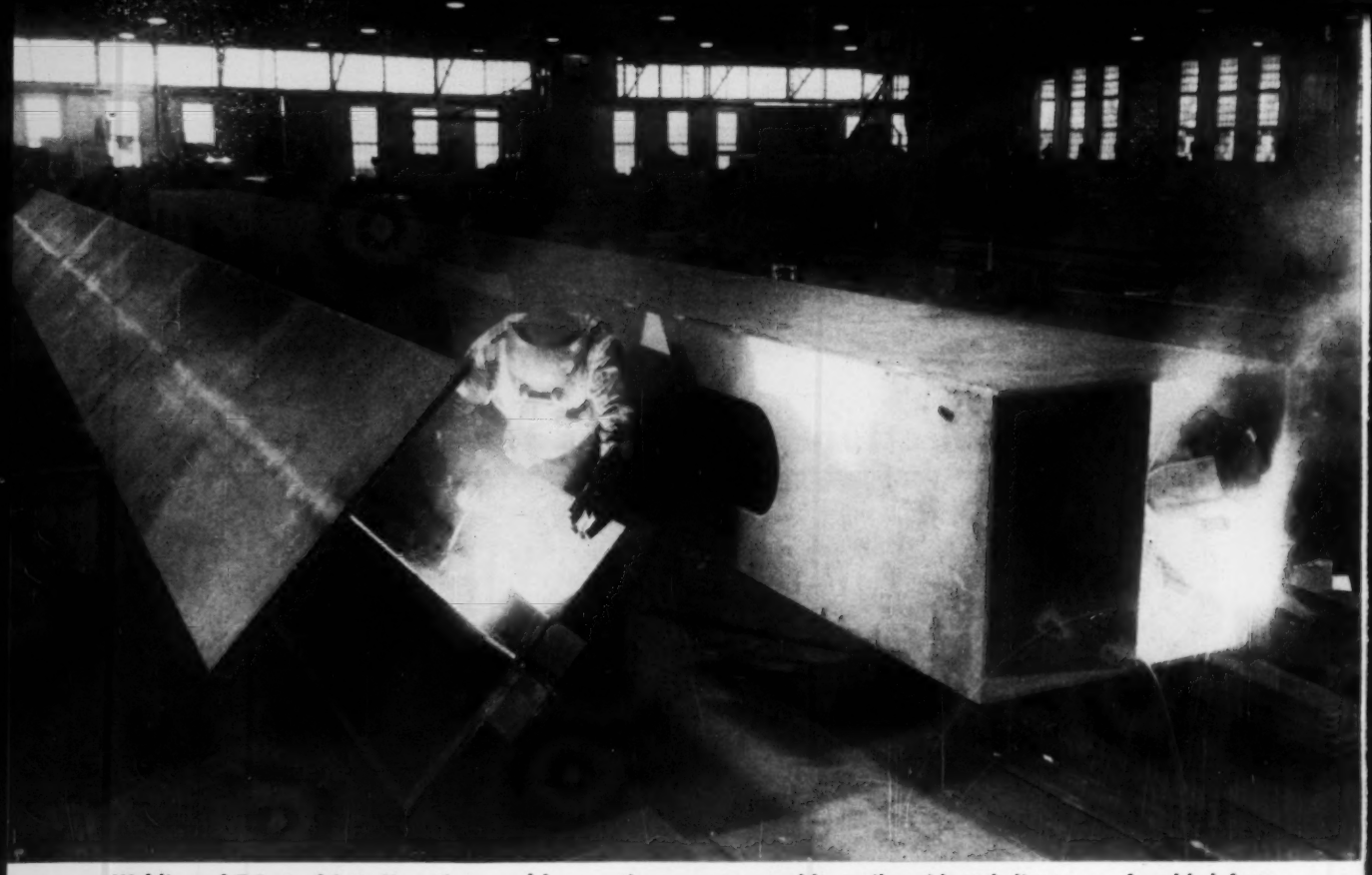


Blade and V-type snowplows

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN

Look ahead... *move ahead*...and stay ahead

with ALLIS-CHALMERS



Welding of T-1 steel into H sections and box sections went smoothly until accidental discovery of weld defects.

Welding Defects in High-Strength

Steel erection on Carquinez Bridge in California was proceeding smoothly last spring when a slight accident started a chain of events that led to discovery of minor defects in welding of some of the built up members. As a result steel erection was stopped for two months while contractor and owner—American Bridge Division of U. S. Steel and the California Division of Highways—sought the cause and repaired the defects.

Work was resumed about the first of August and the bridge is expected to be completed by the end of November, a month ahead of original contract date.

The weld defects they found serve to emphasize the care that must be taken in welding high strength steels such as A242 and T-1, which are used extensively at Carquinez. But both American Bridge and the California authorities have the fullest confidence in the repairs and in the weldability of such steels. The minor cracks were all in tension members and were such that even had they not been discovered the bridge would have been safe.

Except for delay caused by the welding defects, erection of the bridge proceeded swiftly, partly because extensive use of high strength T-1 steel meant less weight.

• **Daring design**—The new bridge marks the most extensive use ever made of T-1 steel, with nearly 3,000 tons of the high strength product on the job. This compares with almost 12,000 tons of other steels.

It is considered by many to be a daring design. All members are made by welding plates to form the required section, and previous experience in welding the T-1 material for structural use was limited. As a matter of fact, this is the first major cantilever bridge with members fabricated by welding (joints are bolted).

Geometry of the new structure matches that of the existing bridge that it parallels. There are two 500 ft long back spans, two 1,100 ft cantilever spans, and a 150 ft long central tower. Only noticeable difference is that the suspended spans of the new bridge have straight members instead of arched top chords.

Erection of the structure differed considerably from the similar parallel structure (center lines are 200 ft apart) that was completed in 1927. Falsework for the 500 ft back spans on the new bridge was part of one of the suspended spans, rather than a forest of timber. And the cantilevers were built out piece by piece until they met instead of hoisting the suspended spans from barges on the water below.

There is also a marked and substantial difference between the make-up of individual members of the two structures. Members on the old bridge were made by riveting together rolled shapes. This resulted in extensive use of latticed members that gives the structure a gingerbread appearance, compared with the sleek, clean-cut lines of the welded members of the new bridge.

• **The welded sections**—There are three basic shapes used on the new work. An I-section is used for floor beams and approach girders, an H-section is used for tension members and a box section is used for compression members of the trusses.

Box sections have perforated cover plates. Some boxes have a single interior longitudinal diaphragm. Heavy columns members have as many as three interior diaphragms up to 3 in. thickness. In the case of multiple diaphragms in the box members, exterior diaphragms are perforated, as are the cover plates.

There has been considerable experience in welding H and I-sections. But a detail had to be carefully worked out for the box-section welding. The cover plates are welded to the box sides by

Erection of new bridge (foreground, paralleling the old) was stopped long enough to repair faulty members.

Steel Won't Slow Carquinez

exterior fillet welds. Substantial clearance was left along the sides of the cover plate to permit the weld to be made without interfering with the edges and positioning of gusset plates. There were no interior welds required to connect the cover plates.

• **T-1 saves weight**—Early analysis of the bridge design using regular structural steels indicated that members with greatest stresses would be relatively heavy. And as such members were obviously very stiff, prohibitive secondary stresses would be introduced that in some cases became greater than the primary stresses. Many of the compression members on the old bridge were pin connected to remove secondary stresses.

Use of T-1 steel with a working stress in tension of 45,000 psi (minimum yield strength is 90,000 psi) resulted in reduction of member weight. The designers worked to an allowable compression strength which was figured as $36{,}000 - 1.75\,(L/r)^2$.

Weight saving resulting from use of T-1 steel can be seen in two specific examples. One top chord member would have weighed 748 lb per ft using low alloy steel; it actually weighed 400 lb per ft made of T-1 steel. A major bottom chord member weighed 470 lb per ft as built, compared with 840 lb per ft, the weight for a riveted multiple plate design.

• **Defects discovered accidentally**—Discovery of the welding defects came by accident after the members had been shipped to the job. A ship passing under the bridge far in excess of the 5 knot speed limit rocked a derrick barge, and a steel member was dropped into the water.

When recovered the next working day, its only noticeable damage was bending of gusset plates bolted to the beam. State engineers thought the piece should be double checked, and a magnaflux test disclosed weld defects that could not be attributed to the fall. Other similar pieces were magnafluxed both in the field erection yard and in place on the bridge. More defects were noted.

All of the defects were confined to fillet welds in H-sections used as tension members. They occurred in both A242 and T-1 steels. A total of 56 members was involved, amounting to about 3% of the total tonnage of welded fabrication on the project.

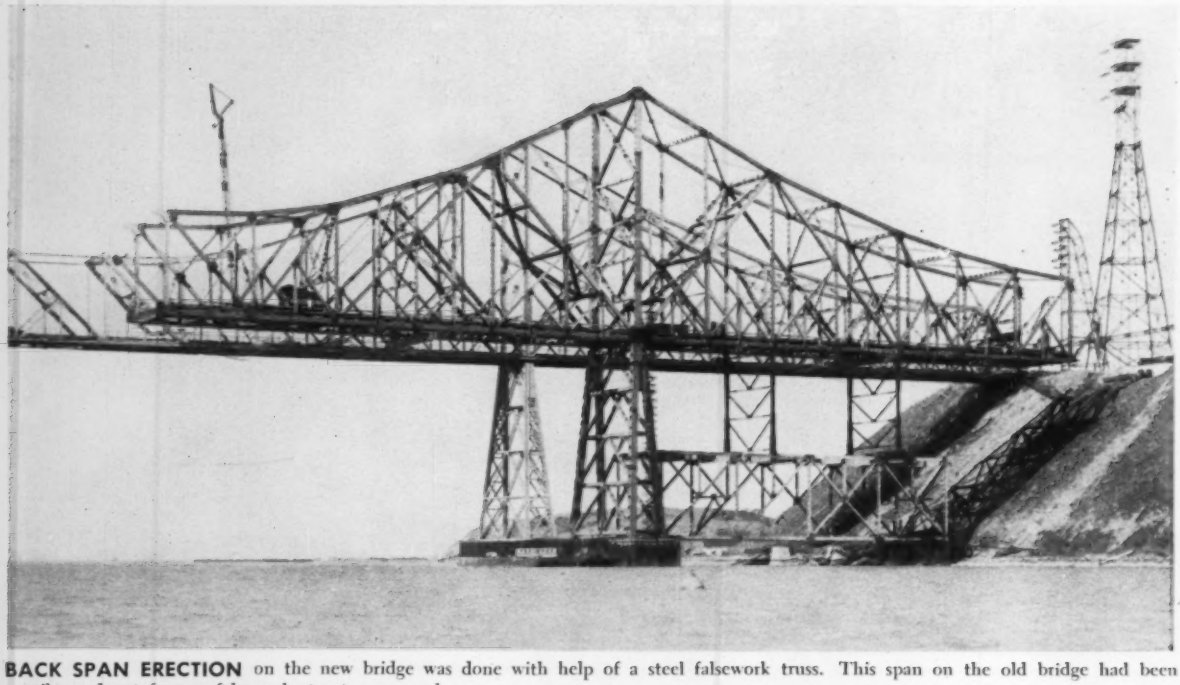
Repair meant grinding out the cracks or gouging out the defective weld metal with a carbon arc torch. Then the metal was replaced by manual welding.

State and steel company engineers were well aware in advance of the critical nature of welding high strength steels. Research programs had worked out procedures to be followed. For example, more careful control of both voltage and moisture is necessary. Mechanically guided and controlled processes are used wherever possible both for welding and for flame cutting. Flame-cut edges to be welded are treated mechanically to remove hardened metal, oxides, scale and surface irregularities. Exposed flame-cut edges are specially treated by removal of excessively hardened metal, sharp corners and abrupt surface irregularities. Low hydrogen electrodes of the E100 and E110 series proved most satisfactory.

Shop inspection procedure established by the state required only visual inspection for the particular fillet welds found to be defective. This was supplemented by intermittent die checks. Butt welds were required to be radiographed.

• **Cause of cracks?**—An effort is being made to determine the exact cause of the cracks. State officials are convinced that the cracks resulted from some flaw

. . . Steel erection differed from that on the existing, parallel bridge



BACK SPAN ERECTION on the new bridge was done with help of a steel falsework truss. This span on the old bridge had been cantilevered out from a falsework structure near shore.

in the welding procedure. Both steel company and state engineers still have confidence in the weldability of high tensile steels (See p. 00). As a matter of fact, the soon-to-be-bid Martinez-Benicia Bridge includes substantial quantities of similar welded steel members.

• **New and the old**—There are several notable differences between erection of the old bridge and erection of the new bridge. First of all, all the field joints on the new structure are bolted. This, of course, reflects recent development of high strength bolting for use in place of rivets.

The most dramatic difference in erection procedure is that the cantilevers on the new bridge were built out from both sides until they met. On the old bridge, the 433 ft suspended spans were preassembled and each of the 620 ton spans was hoisted from barges by means of counterweights (ENR April 28, 1927, p. 686).

Today's American Bridge officials believe there is less risk in the cantilever procedure than in lifting the heavy suspended spans as their predecessors did 30 years ago. Of course, there is a degree of risk in leaving half a cantilever span sticking out some 500 ft for a period of months. But despite severe winter storms, there was no damage and not much noticeable movement.

The old-timers were literally forced to hoist the suspended spans by design of the structure. Pin-connected compression members in the upper chord of the suspended span would not have been suitable for cantilevering the entire distance.

Another point of difference in erection procedures is method of erecting the back spans. On the old bridge, the south back span was constructed on timber falsework with work starting from the shore end. A traveler worked out just below the upper chord, erecting the first midstream tower as it went and then proceeding out along the cantilever span.

At the north back span, water depth was too great for full falsework. But it was possible to install falsework near the shore. So the old-timers built the north span part way out on falsework and then cantilevered it to the first tower. Note that the back span cantilevering in this case extended from shore to tower.

On the recent work construction started with the towers and the steel was erected by the balanced method. A falsework truss provided support in the back span. Back span steel was kept about a panel ahead of cantilever span steel.

The falsework truss is an inverted eight panel section of the north cantilever suspended span. Its length is 246 ft 6¼ in. bearing-to-bearing. As several of the falsework truss tension members are put in compression, they were reinforced with 8x10 and 10x10 timbers up to 32 ft long, bolted to the members.

Erection bents spanned between the falsework truss and the back span steel. There were three bents used in all but no more than two at one time—and under most conditions only one—was in place. These bents were the only outside steel brought in for erection purposes; they had previously been used on the Mackinac Bridge.

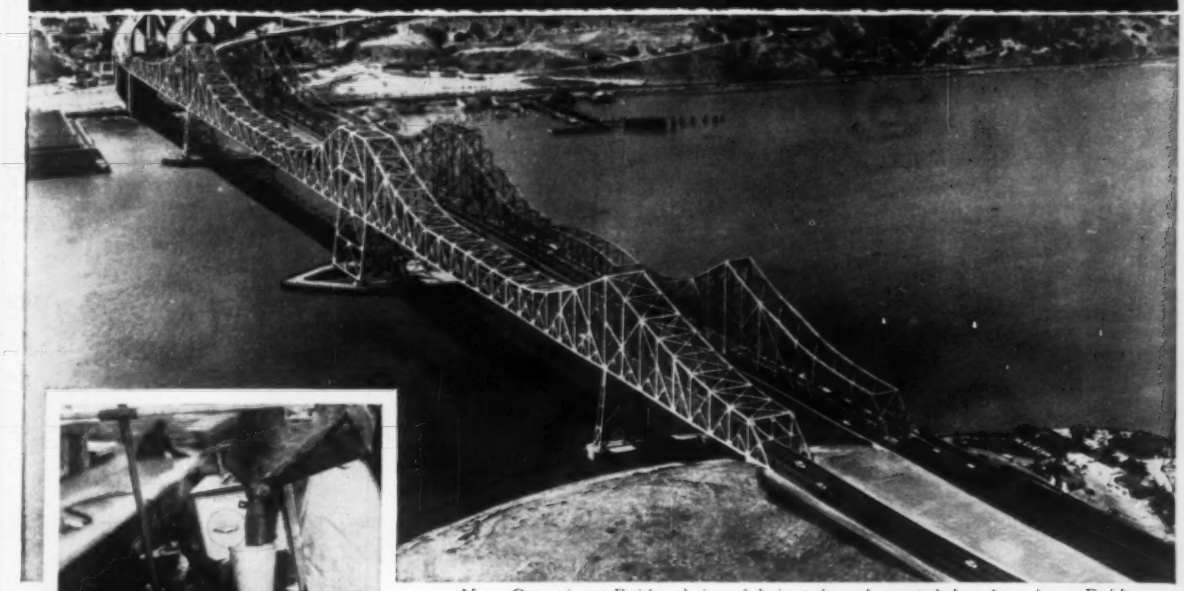
• **Erection equipment**—American Bridge used three different type rigs in the erection of the bridge. Towers and some of the lower chord steel were erected by a tower derrick mounted on two 34x137 ft steel compartmented barges 11 ft deep. The barge has a 90 ft tower and mounts a standard stiff leg derrick with a 130 ft boom and 25 ft jib. It is capable of an 85 ton lift at an extended boom and can lift 146 tons at short boom. Biggest actual lift necessary was a 37 ton section of tower leg.

Most steel erection was handled by stiff leg skid travelers that were mounted on the lower chord of the trusses. These travelers have 120 ft booms with 20 ft jibs. Heaviest lift by the travelers was 21 tons. On the balanced construction, one traveler moved out each way from each tower.

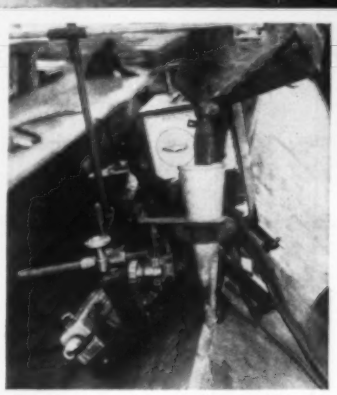
Final rigs were guy derricks such as used on building construction. The reason these were necessary is that it is 168 ft from bottom chord to the top chord at the tower location. This is too high for the travelers to reach. Accordingly, the guy derricks were mounted

Weldynamics

ARC WELDING AT WORK CUTTING COSTS



New Carquinez Bridge being fabricated and erected by American Bridge Division, U. S. Steel Corporation for the State of California.



Mechanized Manual Lincolnweld Submerged Arc Welder makes ⅜ inch fillet welds on corners of box sections.

WELDED CARQUINEZ STRAIT BRIDGE

gives taxpayers more for their money

THE use of welded fabrication and USS T-1 and A 242 high tensile steels in the construction of the Carquinez Strait Bridge will save the State of California almost $1,000,000.

Welded design saved tons of steel, simplified detailing, and produced a better looking bridge that will be easier to maintain than its riveted counterpart.

The heavy structural members were shop fabricated using Lincolnweld Automatic and Semi-Automatic Submerged Arc Welders. The Lincoln machines provided the speed and precise control necessary to keep welding costs at a minimum while producing dependable welds of the very highest quality.

Progress in bridge design is measured by the increased use of welded design . . . for better bridges at lower cost.

DESIGNERS & ENGINEERS!

"Studies in Structural Arc Welding" published periodically and sent free to architects and engineers.

"Procedure Handbook of Arc Welding Design and Practice" 1300 pages, 1100 illustrations, 466 page section on structural design for arc welding. $3.00 postpaid in U.S.A., $3.50 elsewhere.

Bridge Design Seminars are held regularly at our plant in Cleveland.

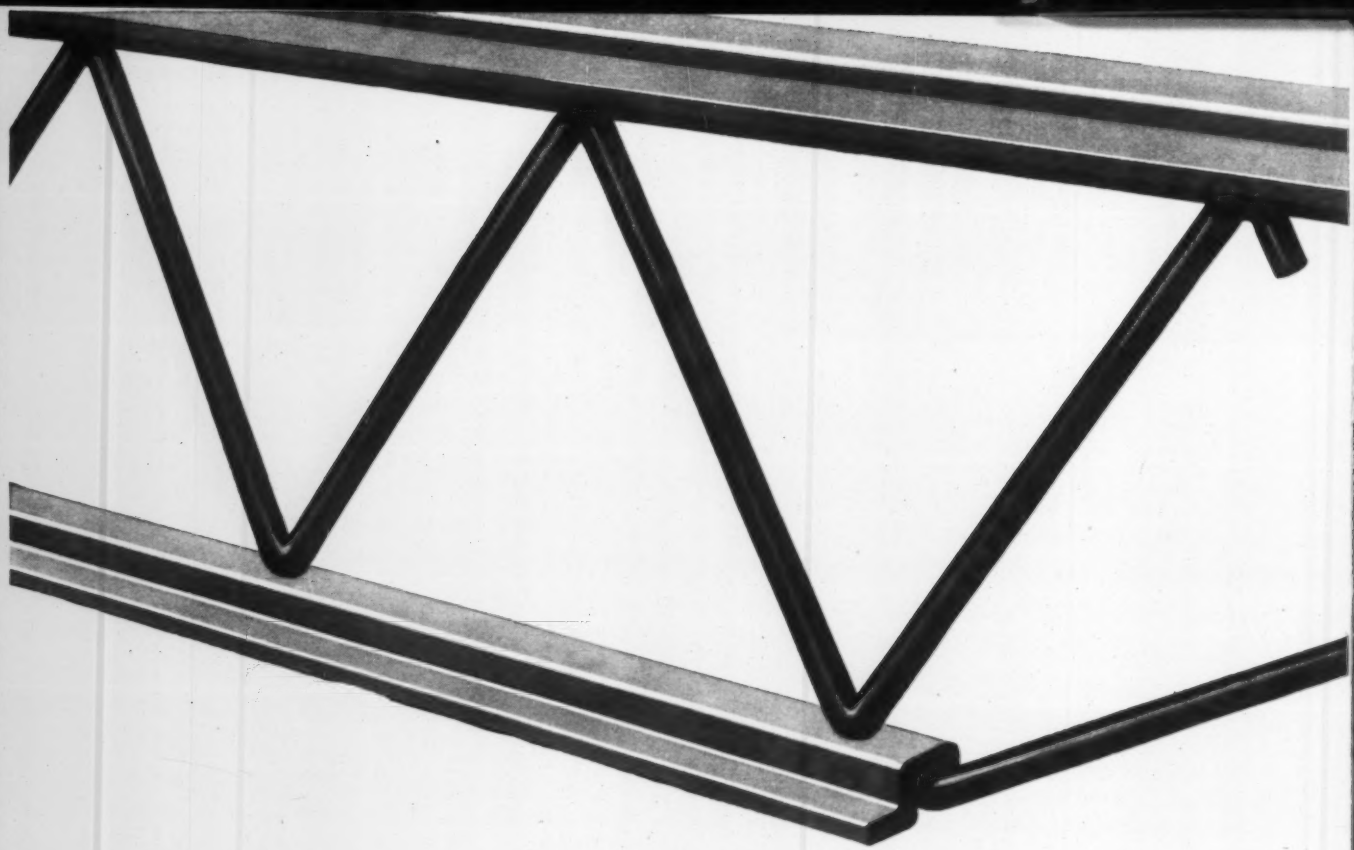
Write for information.

The World's Largest Manufacturer of Arc Welding Equipment

LINCOLN

© 1958 The Lincoln Electric Company

THE LINCOLN ELECTRIC COMPANY • DEPT. 3444 • CLEVELAND 17, OHIO



NEW TRUSCON "O-T"
in a new design to fulfill

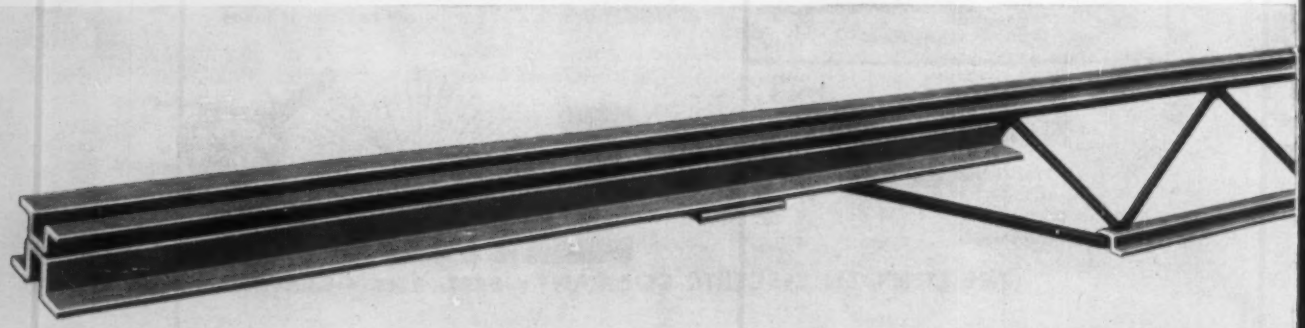
You asked for it... and here it is! Truscon's newly-designed, more versatile, stronger "O-T"®, Series "S" (Shortspan) Steel Joist... now being manufactured in the industry's newest fabricating plant, designed for highest efficiency.

You wanted a joist with a straight bottom chord to carry to spandrels and columns. Truscon designed it. You wanted a joist with an economical extended end. Truscon made it. You wanted a joist with good stability in both directions. Truscon engineered it.

And, you wanted more. You wanted a Series "S" Joist in the longer 40- to 48-foot range. Truscon produced it.

You wanted more exact, predictable coverage of all load conditions. Truscon, in co-operation with the Steel Joist Institute,

NEW TRUSCON "O-T" STEEL JOIST is a Warren Truss fabricated of accurately cold-formed top and bottom chords and a plain round web member. Cold formed steel sections not only make an exceptionally strong joist, but also add a pleasing appearance. Note the attractive extended end now possible with this new Truscon development.



STEEL JOIST
your design ideas

has increased the number of "S" Series sizes from 17 to 25.

You wanted the efficiency and economy of a balanced design—a joist design to balance with all other structural elements. Again, in co-operation with the SJI, Truscon will market this new "O-T" Joist designed to 20,000 psi. working stress as of January, 1959.

In producing and marketing this new design, Truscon continues to exceed the rigid standards of the Steel Joist Institute Quality Verification Program—your assurance of predictable, dependable load-bearing. The new design is available now. Ready to be incorporated into your next set of plans. Send coupon for specifications, design data, do's and don'ts.

REPUBLIC STEEL

REPUBLIC STEEL

World's Widest Range of Standard Steels and Steel Products

REPUBLIC STEEL CORPORATION
TRUSCON DIVISION
DEPT. C-6125
1060 ALBERT STREET • YOUNGSTOWN 1, OHIO

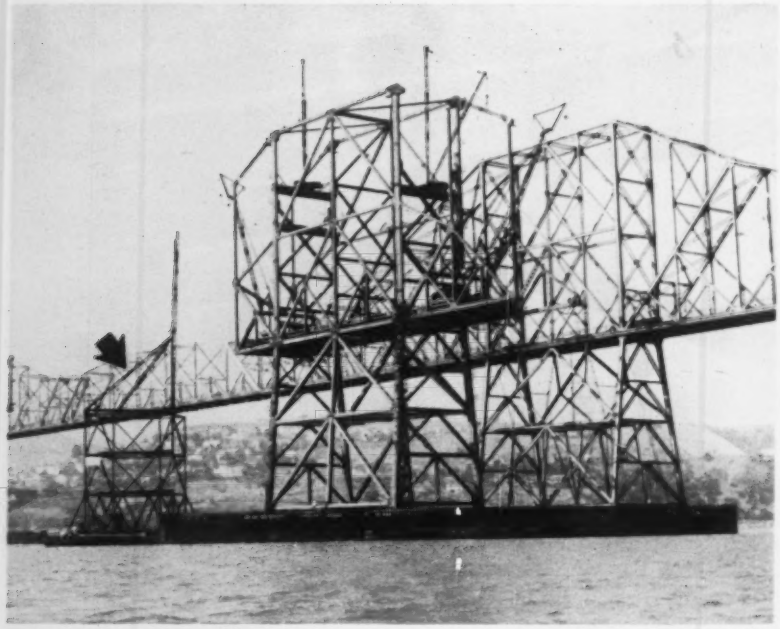
Please send catalog describing new Truscon "O-T" Series "S" Steel Joists.

Name _____ Title _____

Firm _____

Address _____

City _____ Zone _____ State _____



CENTRAL TOWER ERECTION had a barge-mounted tower derrick (arrow), two stiffleg skid travelers and, up top, a pair of guy derricks.

on the towers and jumped up as needed. The derricks have a 100 ft mast with a 90 ft boom, with heaviest lift being 22 tons.

The south back span and its counterbalancing cantilever span was erected first. Then followed the north back span and its counterbalancing cantilever span. However, as part of this cantilever was in the falsework span, the cantilever was left partly constructed until the falsework truss could be dismantled. Final step was erection of the center tower and cantilevers from both sides of it.

The spans are to be swung by a series of jacks. Bottom chord connection will be made by extending jacks in the lower chord and releasing jacks in the upper chord with all jacks on the back span end (as opposed to the tower end). Upper chord connection will be made by jacking in the upper chord on both sides of the closure.

Paving the bridge is under way under a subcontract held by Charles L. Harney of San Francisco. The south back span and part of its counterbalancing cantilever were already paved before the span was swung.

• **Removes bottleneck**—When the new bridge and its approach freeways are opened late this year, one of the most critical bottlenecks on the northern California highway system finally will be removed.

The existing bridge, with 42 ft spacing center-to-center of trusses, has a 30 ft roadway—three 10 ft lanes. A contract already has been awarded for $1,053,446 to Rothschild, Raffin & Weirick, of San Francisco, for revisions to the existing structure. These center around redecking the bridge to provide a 34 ft 4 in. roadway by reducing width of the 4 ft sidewalks.

While these revisions are under way, the new bridge will carry two-way traffic with two 12 ft lanes in each direction. This, of course, is a substantial improvement over the existing narrow three lane bridge. Eventually the existing bridge will carry three lanes of southbound traffic while the new bridge will carry four lanes of northbound highway traffic.

Although the work is on the interstate system, it was undertaken before the interstate program went into effect. Financing is by revenue bonds supported by tolls. The toll is expected to be 25 cents for a passenger car with a special commute rate of 10 cents provided by a 50 trip, two-month book of tickets.

• **Who's doing it?**—Carquinez Bridge is a project of the California Division of Highways. Design was under the direction of A. L. Elliot, bridge engineer—planning. Leonard C. Hollister is Carquinez projects engineer in charge of the work. Resident engineer for the state is Oscar A. Johnson.

American Bridge Division of U. S. Steel is building the Carquinez Bridge superstructure under a $9.5 million contract. When bids were open in late 1955, the American Bridge bid was less than $35,000 below the second low bidder (ENR Dec. 15, 1955, p. 45).

Erection superintendent for American Bridge is Charles O. "Slim" Edmonds, who served as an erecting foreman for American Bridge on the San Francisco-Oakland Bay Bridge. Senior field engineer on erection is Oscar T. "Red" Hunt.

The bridge steel is being erected on spectacular deep water caissons installed under a separate contract (ENR April 18, 1957, p. 38).

Carquinez Bridge Builders Are Confident

Questioned by ENR, American Bridge Division of U. S. Steel gives this official statement on the Carquinez Bridge weld defects:

"Since this is the first structure of this type to be built, some problems have been encountered both in the shop and the field. These were not confined to any single plant or operation. It is always expected that the development of new techniques presents new problems, but these were anticipated and are typical of developing the best procedures for any new material or designs. A great number of research and experimental programs had preceded the use of the high tensile strength steel, the results of which indicated that the many advantages of such steels well warranted their application.

"Some members required weld repair, but they represented a relatively small part of the total high tensile strength steel in the structure. The repairs were all confined to the weld metal. In no case was there found any defect in the high-strength steel itself, resulting from the welding process.

"Intensive investigations are being conducted to determine the cause of the welding problems. We of the American Bridge Division are anxious to solve them, as is the United States Steel Corporation.

"When this bridge is completed, it will be of the highest quality material and workmanship. The weldability of the high tensile strength steels in the Carquinez Bridge has been amply demonstrated in many critical applications where excellent service is being achieved."

Why shouldn't we be interested
IN PARTNERSHIP INSURANCE?

**"After all,
we know the future
of our families
may depend upon it."**

By law, the death of a partner means the total dissolution of the partnership organization. It could bring business activity to a complete standstill.

The result: possible financial chaos to the business and extreme hardship to the families involved.

Ætna Life's Business Planning Service can help prevent this . . . can provide in advance for a smooth and orderly transfer of the business.

Thoroughly trained representatives in 91 agencies from coast to coast are ready to help you and your attorneys through Ætna Life's unusual Business Planning Service.

ÆTNA BUSINESS LIFE INSURANCE PLANS ARE SPECIALLY DESIGNED . . .

- **To preserve PARTNERSHIP values when death comes to any partner.**
- **To preserve SOLE PROPRIETORSHIPS for heirs or selected employees.**
- **To preserve ownership values when death comes to any stockholder in a CLOSE CORPORATION.**
- **To indemnify any firm for the death of a KEY MAN.**

Add Life to your Business with Ætna Business Life Insurance

ÆTNA LIFE
INSURANCE COMPANY

Affiliates:

ÆTNA CASUALTY AND SURETY COMPANY
STANDARD FIRE INSURANCE COMPANY
Hartford, Conn.

Ætna Life Insurance Company
Hartford 15, Connecticut

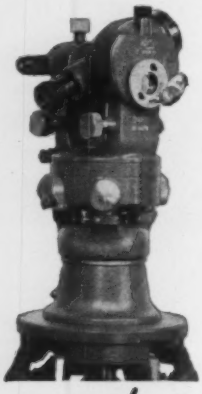
Gentlemen:
Please send me a copy of your new business life insurance booklet "Will This Man Take Your Business With Him When He Dies?"

Name_____

Address_____

_____

There's a KERN SURVEYING INSTRUMENT *to Serve* Your Every Need



and There's a KERN REPRESENTATIVE in Your Area... *to Serve* YOU!

CARL HEINRICH COMPANY
711 CONCORD AVENUE
CAMBRIDGE 38, MASSACHUSETTS

L. A. SCIENTIFIC INSTRUMENT CO.
2451 RIVERSIDE DRIVE
LOS ANGELES 39, CALIFORNIA

K. B. WOOD & ASSOCIATES, INC.
2623 N. W. INDUSTRIAL STREET
PORTLAND 10, OREGON

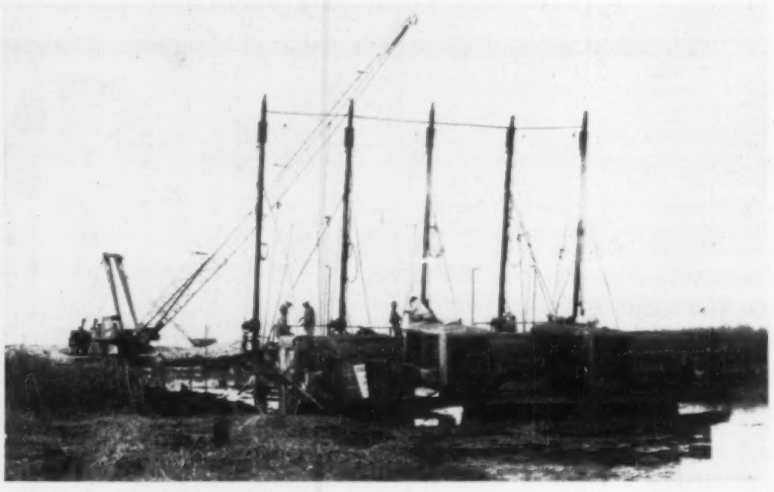
R. L. SARGENT COMPANY
M & M BUILDING
HOUSTON 2, TEXAS

STANDARD BLUE PRINT COMPANY
1413-15 HARNEY STREET
OMAHA 2, NEBRASKA

COMPLETE FACTORY SERVICE
BY EXPERT SWISS INSTRUMENT TECHNICIANS

Kern SWISS *The FINEST in SURVEYING EQUIPMENT*

KERN INSTRUMENTS INC.
120 Grand St., White Plains, N.Y.



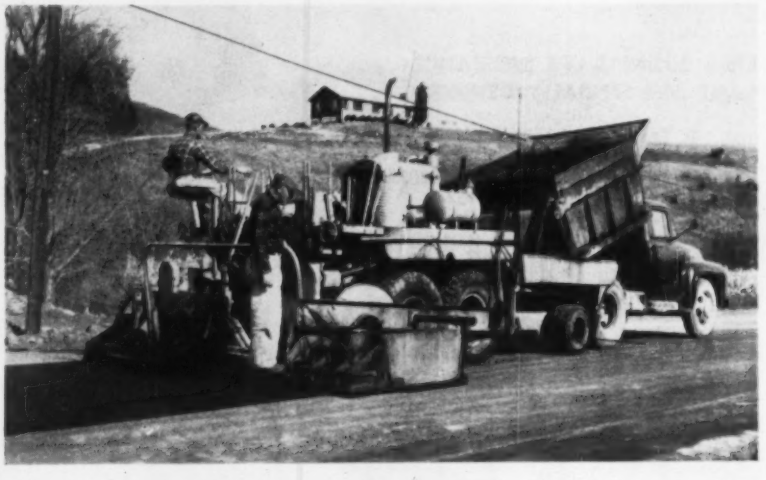
Hollow steel wheels mean . . .

Maneuverability in Muck

This special drilling rig, mounting five rock drills and two air compressors on seven hollow steel wheels, has averaged 3,600 ft of 3¼ in. hole per 10 hour period over the last two years in the Florida Everglades.

Clemens Construction Co., West Palm Beach, Fla., built the rig for an 11 mile canal job, part of the Central and South Florida flood control project. Big advantage of the rig is its maneuverability; two air motors drive two of the 7 ft dia wheels.

Holes are 20 ft long maximum, mostly in limestone below a couple feet of muck, and are spaced 9x9 ft. Drills are Ingersoll-Rand X-71WDs equipped with 24 ft steels.

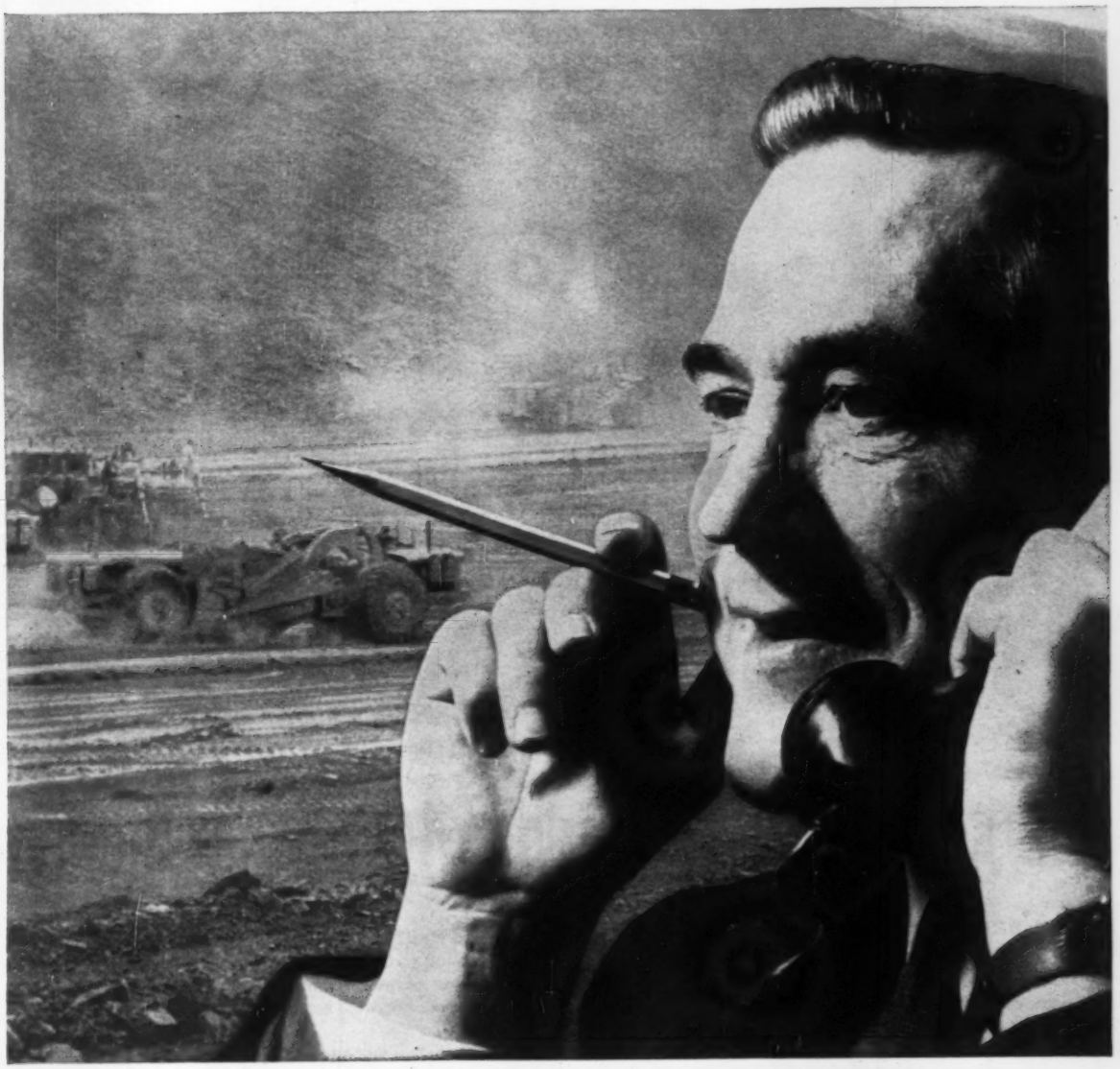


Versatile Paver-Finisher

A Blaw-Knox PF-90 Bituminous Paver-Finisher was used by Harrison Construction Co. for laying a stone base course for an asphalt paving job on an 8.3 mile stretch of U.S. Highway 441 between Knoxville and Sevierville, Tenn.

Both a 13 in. thick calcium chloride stabilized base—mostly ¾ in. in diameter and under—and 4 in. of bitu-

The man with the sharp pencil picks Firestone!



SHOCK-FORTIFIED TIRES MADE WITH FIRESTONE RUBBER-X REDUCE DOWNTIME LOSSES!

On earthmoving equipment from scrapers and belly-dumps to hauling trucks of all kinds, Firestone Off-the-Highway tires are delivering new lows in tire cost-per-hour! The two big reasons are Firestone Rubber-X and Firestone S/F (Shock-Fortified) Nylon cord! Combined with Firestone S/F Nylon, Firestone Rubber-X puts extra stamina and strength into every Firestone tire! Tough Firestone treads and sidewalls defy cuts in the roughest going. Firestone S/F Nylon bodies shrug off bruising shock and impacts. Count on Firestone Off-the-Highway tires to turn downtime losses into worktime profits! Call your Firestone Dealer or Store for tires or tire service.

Super Rock Grip Rock Grip Excavator® Rock Grip Excavator® W.B.

TUBELESS OR TUBED

Firestone

BETTER RUBBER FROM START TO FINISH

WHEN ORDERING NEW EQUIPMENT ALWAYS SPECIFY FIRESTONE TIRES.

Enjoy the Voice of Firestone every Monday evening on ABC television

Copyright 1958, The Firestone Tire & Rubber Company

Design a 2-lane steel bridge to cross a modern

AMERICAN BRIDGE DIVISION of United States Steel announces a $44,000 STEEL HIGHWAY BRIDGE DESIGN COMPETITION dedicated to stimulating the engineering mind to a more imaginative, more effective use of steel in the construction of small bridges.

If you, as a professional or design engineer or as a college engineering student, can come up with a more imaginative, attractive and economical design, not only may you win up to $15,000 in award money, but your efforts may contribute materially to the most challenging road-building program ever undertaken. For, according to conservative estimates, the tremendous 41,000-mile Federal Highway Program will call for the construction of at least a bridge a mile!

The competition involves solving a relatively simple but important problem that will not demand too much of your time.

PROBLEM: Get two lanes of traffic across a modern 4-lane highway, in accordance with the standards for today's highways.

OBJECTIVES: Originality of design, greater utilization of the inherent properties of steel, economy, and aesthetic appeal.

REQUIREMENTS: Just one. The steel bridge must comply with the Geometric Standards for the National System of Interstate and Defense Highways using H-20-S16-44 loading. The type of structure, the type of connections, span length and number of piers, if any, are completely up to you since you are designing with steel.

ELIGIBILITY: The competition is open to all professional and design engineers and college engineering students except employees and/or members, and their immediate families, of the following firms and groups:

- United States Steel and its subsidiaries, divisions, agents and dealers
- Structural steel fabricating firms
- American Institute of Steel Construction members
- Rules Committee and Judges

See list of awards at right.

RULES AND JUDGING: The competition will be under the supervision of the American Institute of Steel Construction, which has appointed a Rules Committee and a panel of judges composed of prominent consulting engineers and architects.

DEADLINE: May 31, 1959.

SEND FOR YOUR ENTRY BOOKLET NOW: Contains complete information on the Steel Highway Bridge Design Competition—everything you need to know to prepare your entry. Just fill in and mail the coupon and get started with your design without delay.

USS is a registered trademark

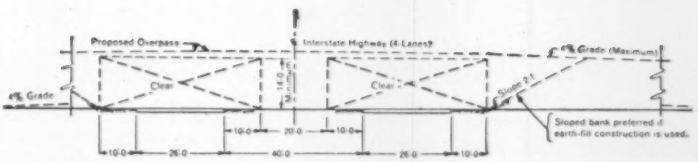
highway... $44,000 in cash awards!

Awards for Professional Engineers

1st Award	$15,000.00
1st Honorable Mention	$10,000.00
2nd Honorable Mention	$ 5,000.00
Five 3rd Honorable Mentions	$1,000.00 each

Awards for College Engineering Students

1st Award	$4,000.00
1st Honorable Mention	$2,000.00
2nd Honorable Mention	$1,000.00
Four 3rd Honorable Mentions	$500.00 each



ELEVATION and CLEARANCE DIAGRAM

American Bridge Division of United States Steel

General Offices: 525 William Penn Place, Pittsburgh, Pa.

Competition Editor, Room 1831, American Bridge Division
525 William Penn Place, Pittsburgh, Pennsylvania

Please send me a copy of your $44,000 Steel Highway Bridge Design Competition entry booklet.

Name.....

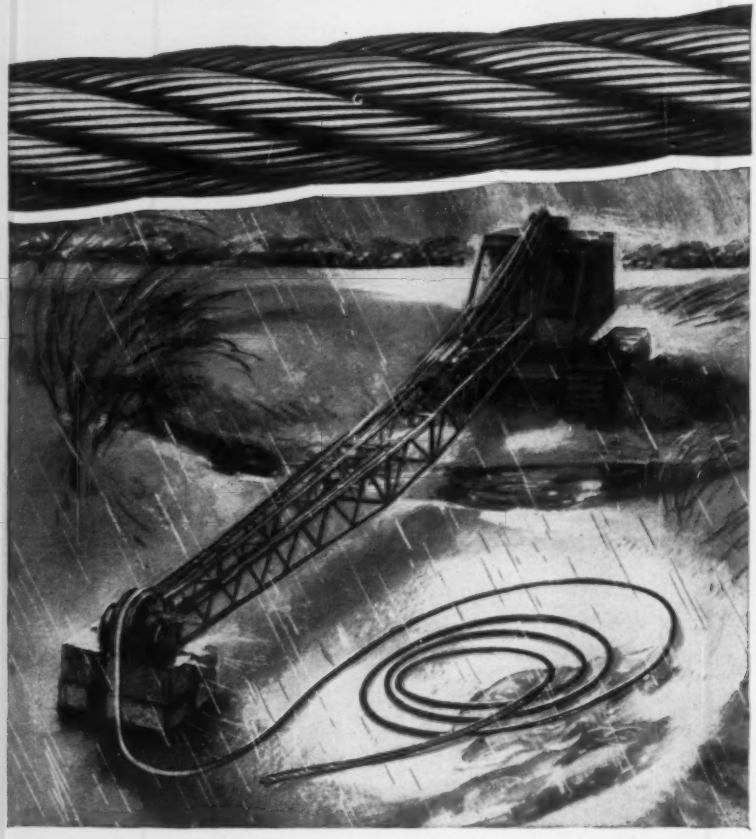
Professional or Design Engineer / Engineering Student } (Check one).....

Address.....

City.....State.....

storage...

is this your wire rope problem?



Avoid deterioration while equipment is idle. Red-Strand Bulletin No. 103 tells how.

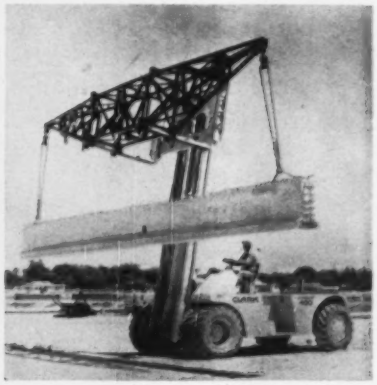
Costly damage can be the penalty for improper outdoor storage of wire rope especially in winter. Several months of exposure can corrode rope so severely that breaking-strength is dangerously reduced with a loss much greater than the cost of adequate protection. How best to provide that protection is clearly explained in special Service Bulletin No. 103. This is one of a series, devised to help wire rope users get better performance without greater cost. Copies of bulletins are sent free on request. Write H. K. Porter Company, Inc.—Leschen Wire Rope Division, St. Louis 12, Mo.

LESCHEN
Red-Strand
WIRE ROPE

H. K. PORTER COMPANY, INC.
LESCHEN WIRE ROPE DIVISION

minous material were laid with the equipment. With it, the Harrison firm claims to have cut its work time nearly in half on the job, having placed some 5,000 tons of stone per day.

Says R. S. Neff, paving superintendent on the job: "It did a much better job than a stone spreader. It worked at a speed of 4½ mph, it helped pack stone as it was laid, and it permitted a more uniform thickness than the old method."



Boom Slips on Truck Forks To Handle Concrete Shapes

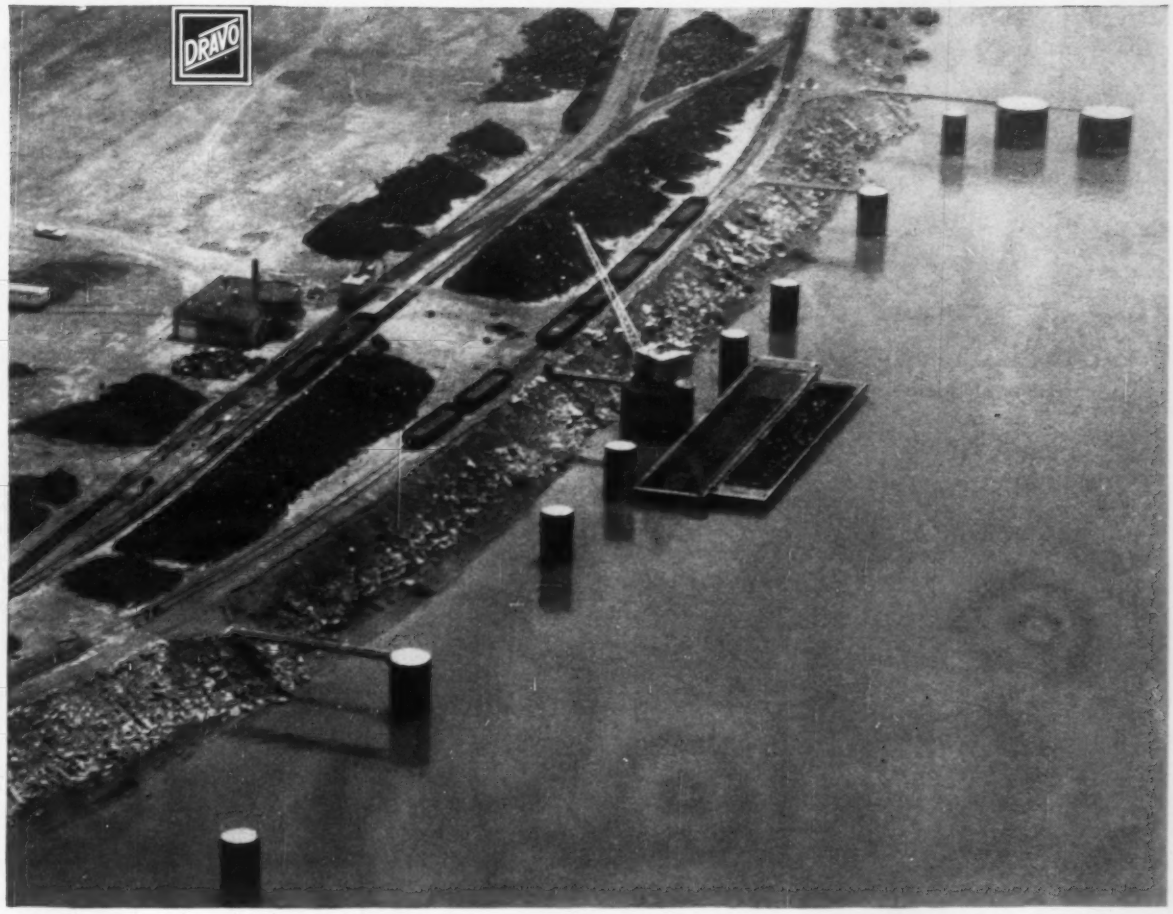
A boom attachment is slipped on the forks of a Clark CY-400 truck to remove and carry prestressed concrete structural shapes from forms with maximum ease and minimum danger of damage.

Adjustable slings hang from each end of a 36 ft long boom fabricated of tubular steel and angle iron bracing. Sleeves on the bottom of the boom receive the truck's forks for quick attachment and removal. With the slings attached to hook-eyes imbedded in the concrete, the forks are raised to lift the member. The rig is able to handle shapes up to 80 ft long. It was made by Dura-Stress, Inc., owner of an 11-bed casting yard at Leesburg, Fla.

Steel Lip for Quick Digging Improvised by Contractor

An 18 in. steel lip was bolted to the cutting edge of the bucket of an International Drott TD-6 to gouge out a temporary patch laid over a gas line running down the center of a Los Angeles street.

The lip penetrated 10 to 16 in. to rip out the patch so that permanent blacktop could be put down. The rig, improvised by the contractor, L. W. Fleming, Glendale, Calif., also made it easy for the excavated material to be loaded out by the tractor.



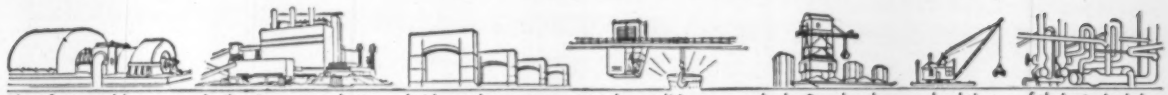
New river-rail terminal speeds scrap to Pittsburgh mills

Twenty-six miles above Pittsburgh, this new Monongahela River Terminals Corporation facility gives district steel mills and shippers important flexibility. Scrap steel, raw materials and finished goods arrive at the terminal via barge or rail—are stored—or trans-shipped out by barge or rail.

Built by Dravo, the terminal's 1065-foot, eleven-cell dock utilizes economical steel sheet pile construction. In addition, 40,000 cubic yards of mud and silt were dredged from the river bottom to create a suitable harbor.

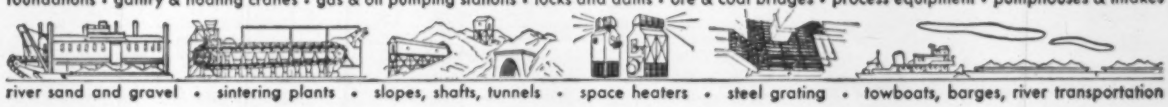
Dravo's wide experience on construction jobs "in or around water" can help you realize genuine economies on such projects. For information on this or the other products and services pictured below, write DRAVO CORPORATION, PITTSBURGH 25, PENNSYLVANIA.

DRAVO
CORPORATION



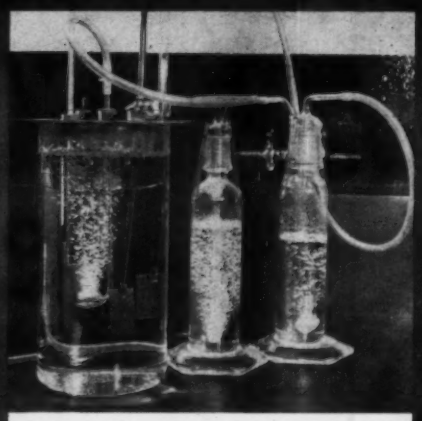
Blast furnace blowers • boiler & power plants • bridge sub-structures • cab conditioners • docks & unloaders • dredging • fabricated piping

foundations • gantry & floating cranes • gas & oil pumping stations • locks and dams • ore & coal bridges • process equipment • pumphouses & intakes

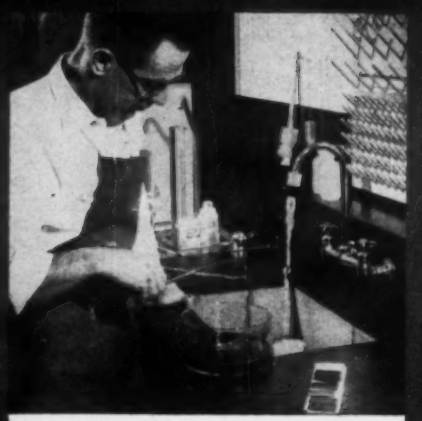


river sand and gravel • sintering plants • slopes, shafts, tunnels • space heaters • steel grating • towboats, barges, river transportation

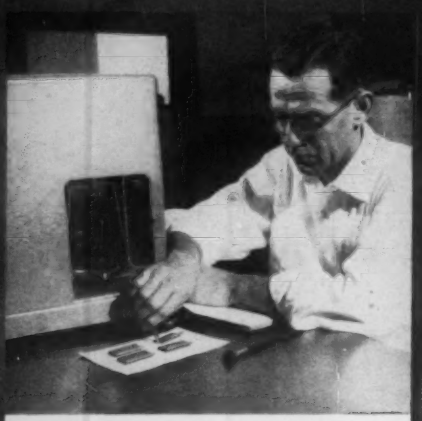
1 Analytical weighing of specimens prior to testing



2 Steam condensate corrosion test



3 Cleaning specimens with inhibited hydrochloric acid



4 Second analytical weighing to determine corrosion weight loss

5 Calculation and statistical analysis of laboratory test results

6 Final examination of specimens under low power magnification

Extensive testing program proves new 4-D Wrought Iron more corrosion-resistant than ferrous substitutes

Test results from the Byers Research Laboratory lend documentary support to the superiority of new 4-D Wrought Iron—over standard Wrought Iron as well as ferrous substitutes.

Convincing case-history service records are now further substantiated by the conclusive findings of our metallurgical staff. Some typical results of this testing program are presented in the chart at right.

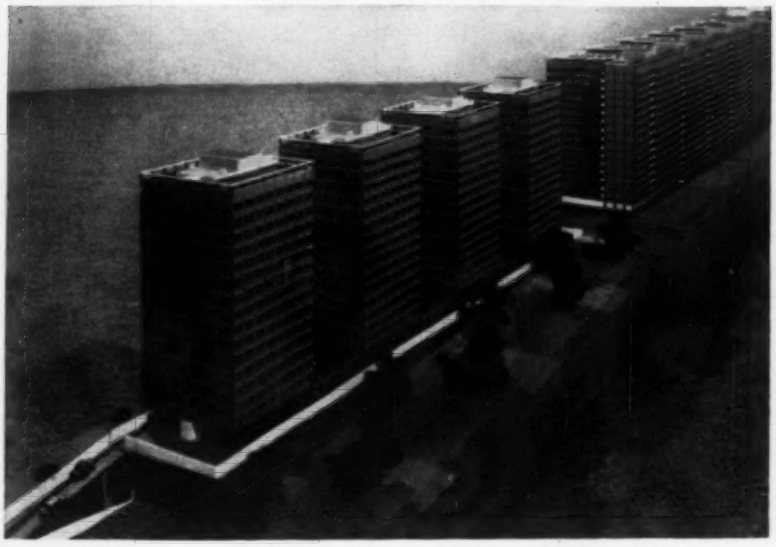
The Byers field service representative will be pleased to relate these test results to your corrosive applications. Write us for helpful literature on new 4-D Wrought Iron. A. M. Byers Company, Clark Building, Pittsburgh 22, Pennsylvania.

BYERS WROUGHT IRON

Comparative Analysis of 4-D Wrought Iron Corrosion Tests

Tests	4-D Wrought Iron	Standard Wrought Iron	Ferrous Substitutes
Severe industrial atmospheric continued exposure 17 years	Corrosion weight loss 540 grams/sq. ft.	Corrosion weight loss 655 grams/sq. ft.	Not included in test
Steam condensate return line	*At least 25% greater corrosion-resistance than standard Wrought Iron	No failures 10 years (still in service)	Complete failure after 2 years
Aerated salt water—5 weeks (Short term test—points indicate 4-D Wrought Iron curve flattening out at much lower rate of attack)	Corrosion weight loss 146 mg/sq. in.	Corrosion weight loss 170 mg/sq. in.	Corrosion wt. loss 226 mg/sq. in.
Brine piping	*At least 25% greater corrosion-resistance than standard Wrought Iron	No failures 23 years (still in service)	Complete failure after 7 years
Salt water, Gulf of Mexico ¼ inch plate—17 years	Corrosion weight loss 4 mills/years (minimum plate thickness now 5/16") Still in excellent condition	Not included in test	Corrosion weight loss 30 mills/years; plate badly pitted, perforated
Downspout	*At least 25% greater corrosion-resistance than standard Wrought Iron	No failures in 29 years (Still in service)	Complete failure after 18 years

*In this application no long term test data yet available on 4-D Wrought Iron. Results shown are derived from short term tests.



2,000 Apartment Project Planned

Unidentified U.S. private investment reportedly is backing a $23 million apartment project to be started next year in Melbourne, Australia. It will contain 2,000 apartments and stretch for more than half a mile along Wellington Parade.

The project will extend 2,800 ft over what is now an open railroad cut. A concrete and steel concourse will be erected over the cut to provide a site for the 15 story buildings. The concourse level will act as a barrier to train noise, and will provide covered parking space for 700 cars.

The apartment houses will be of reinforced concrete construction. The facade will be steel panels and tinted glass in aluminum frames.

Some equipment for the project, including two giant tower cranes to be imported from Germany, will come from abroad. Construction is expected to take three years.

Building contractors will be two Melbourne firms: John Holland Co. Pty. Ltd. and Hansen & Yuncken Pty. Ltd. The designers are J. L. Daly, E. M. Daly, and Don Hendry Fulton of Melbourne.

Mexico City Gets Glass-Walled Building

A 13 story glass-walled building in Mexico City will be the new home of Petroleos Mexicanos (Pemex), the government-operated oil company. The structure will be air conditioned and cost about $1.6 million.

The foundations and structural steel framing are designed to withstand earthquakes. The building is seated on a concrete mat resting on reinforced concrete piles. The piles were driven through 105 ft of plastic clay to an alluvial sand strata.

Floors are reinforced two-way slabs. Reinforcing bars are welded to the steel girders for greater resistance to lateral forces.

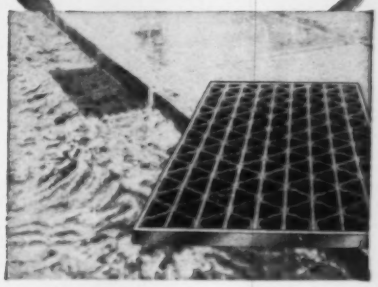
Jorge Dominguez and Alfonso Hurtado, Pemex architects, designed the building, and the entire project is being carried out by Pemex personnel. Steel will be supplied by Cia. Fundidora de Fierro y de Acero de Monterrey, S. A.

Argentine National Library To Go Up in Buenos Aires

Construction will start before the end of the year on the new Argentine National Library (Biblioteca Nacional) at Buenos Aires.

The structure will contain a 15 level book "stack" with capacity for storing 5 million volumes. An auditorium seating 1,000 persons, plus six lecture halls for 100 students each, are planned. The Argentine government has set aside $8.3 million for the project.

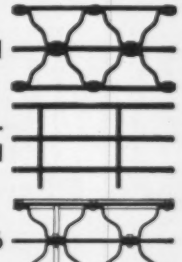
FLOODED HIGHWAYS HINDER TRAFFIC



OLD heavy cast iron draingrates, averaging at best 40% clear opening, often fail to carry off rain water fast enough during heavy downpours, resulting in flooded highways—particularly at underpasses. Also, cracked draingrates must be replaced.

With open steel mesh draingrates, larger clear openings reduce the likelihood of flooded highways considerably. Irving "Dryway" Draingrates are 75% open for greater drainage and are made of steel bars on edge, not subject to cracking.

Available in three basic designs:



Write for brochure on "Dryway" Draingrates
Self-maintaining, Lightweight, Economical, Safe

IRVICO

IRVING SUBWAY GRATING CO., Inc.
Originators of the Grating Industry

Offices and Plants at
5063 27th St., LONG ISLAND CITY 1, N. Y.
1863 10th St., OAKLAND 23, CALIFORNIA

AN ESTIMATED 73% of the petroleum requirements on major St. Lawrence Seaway projects have been supplied by Texaco. Picture shows Bill Partisch (left), Texaco Lubrication Engineer, and Vic Pandolfi, Equipment Superintendent, discussing the Texaco Lube Plan, represented by the numbered barrels. In background, upstream side of Barnhart Island Power Dam and Robert E. Saunders Generating Station designed to generate 1,880,000 kilowatts. Construction of the 3,230-ft. wide, 167-ft. high concrete gravity dam involved excavation of more than 2,500,000 cu. yds. of earth and placing of approximately 2,000,000 cu. yds. of concrete. Dam is a joint project of the Power Authority of the State of New York and the Hydro-Electric Commission of Ontario. Contractors for both U. S. and Canadian sides used Texaco lubricants and fuels, the Canadian contractors being supplied through McColl-Frontenac Oil Co., Ltd., Montreal, a Texaco subsidiary.

NO MORE THAN SIX SERVE ON

Texaco Plan reduces needed lubes to no more than six

MASSENA, N. Y.—Barnhart Island Power Dam is the world's second largest hydro electric project (first: Grand Coulee).

A Texaco lubrication plan and the service that makes it work are credited by the contractor's Equipment Superintendent with playing a significant role in keeping the contractors' equipment in an operating condition.

"The Texaco Lube Plan has really helped," says Victor Pandolfi, Equipment Superintendent for Perini, Walsh, Morrison, Kiewit, Utah Companies, General Contractors. "We've used no more than six high quality lubricants *for the entire project* instead of 15 or 20. There's been less inventory. It's been simpler to service and protect the equipment. We've avoided mistakes in lubrication, and saved manhours and money."

Most Contractors Use Plan

The Barnhart Island Power Dam is just one of the St. Lawrence Seaway projects on which the Texaco Simplified Lubrication Plan has been used. It's estimated that 73% of the petroleum requirements for the Seaway have been supplied by Texaco, and that most maintenance programs have included the Lube Plan.

The Plan has been endorsed for the following reasons: proper lubricants are recommended; less storage needed, reduced confusion and misapplication; lower handling and maintenance costs; less time lost by equipment; fewer lubricating errors; time and money saved.

Developed on the Job, For the Job

The Texaco Simplified Lubrication Plan was developed

THE ST. LAWRENCE POWER DAM

from on-the-job experience in all types of construction work. It's tailor-made for the work to be done. Lubricants may vary from job to job because each Plan is set up to meet the specific needs of a specific project. But regardless of the job, the basic fact remains that—*no more than six lubricants are needed to handle all major lubrication.*

Here are the six lubricants, illustrated above, used on the Barnhart Island project:
(1) For engines: *Texaco Ursa Oil Super Duty Special;* **(2)** for chassis, wheel bearing and general grease lubrication: *Texaco Marfak Multi-Purpose 2;* **(3)** for hydraulic units: *Texaco Regal Oil R&O;* **(4)** for transmissions and differentials: *Texaco Universal Gear Lubricant EP;* **(5)** for wire rope and open gears: *Texaco Crater;* **(6)** for enclosed reduction gears: *Texaco Gear Lube HD.*

Let a Texaco Lubrication Engineer work out a Simplified Lubrication Plan for your project. You'll save time, money and mistakes. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

LUBRICATION IS A MAJOR FACTOR IN COST CONTROL

(PARTS, INVENTORY, PRODUCTION, DOWNTIME, MAINTENANCE)

For pumping sand and metal tailings:

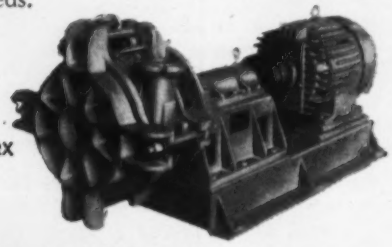
• From mixing pit, slurry of sand and tailings, 35% to 50% solids, is discharged by two Morris "R" pumps at 155 ft. head through 2200 ft. of piping. Rate: 1200 gal/min each.

MORRIS
Centrifugal Pumps

There are limits to what the average pump can take. When sharp, abrasive mixtures or aggregates are handled, a toughness far *above* average is imperative. Morris metallurgists provide just the right degree of built-in toughness required for your pumping application.

CASE HISTORY: Reclamation of high-quality sand from automotive casting-molds has produced significant economies for one of the world's leading auto makers. Powering the re-circulated water system is a series of Morris heavy duty pumps. More than 600 tons of abrasive solids – sand, cast iron sprue, sea coal, clay – are moved through the system per 16 hour day. Since the installation of Morris pumps, maintenance has been reduced to six and twelve month intervals!

Wherever sustained pumping performance is a key to economy, call on Morris. Modern hydraulic design, durability and applications engineering combine to deliver a pump that is matched to *your* specific needs.

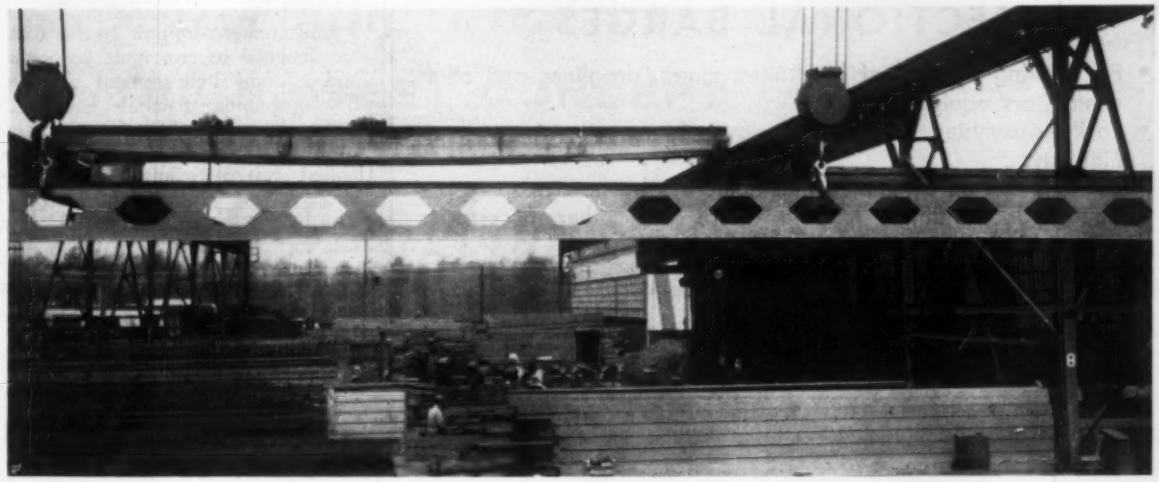


TYPE RX

MORRIS CENTRIFUGAL PUMPS

MORRIS MACHINE WORKS
Baldwinsville, N. Y.

Sales Offices in Principal Cities • Export Office: 50 Church St., New York 7, N.Y.

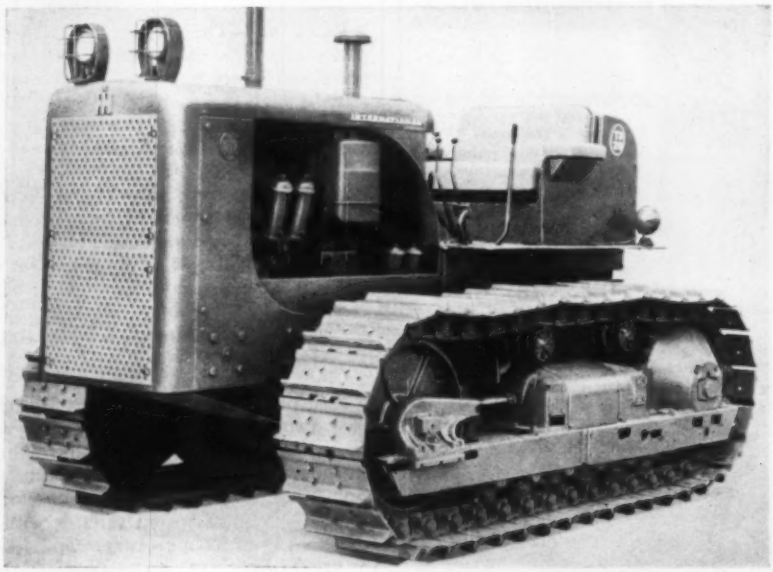


Lightweight Steel Beam Cuts Construction Costs

Diamond Span-R Beams are fabricated from conventional structural steel shapes.

According to Elizabeth Iron Works, which has purchased exclusive rights to manufacture the patented beam, the Span-R Beam is stronger and lighter than the original shape from which it is made. The company also claims that construction costs are reduced considerably.

Suggested uses of the Diamond Span-R Beam are for roofs and floors in public, industrial and commercial buildings. The beam openings will provide convenient passage for all utilities. Elizabeth Iron Works, Inc., Union, N. J.



Transmission Controls Simplified

The International TD-20, a 134 hp diesel crawler tractor, carries a six-speed full-reverse transmission. A single lever is used to shift through the six ranges and a separate lever operates the forward-reverse shuttle bar control to provide six speeds forward and six reverse. When the directional bar is moved, the tractor travels either forward or reverse in any pre-selected speed. Both speed shift and direction selection can can be made with one natural movement of the operator's arm.

Speeds range from 1.5 to 7 mph forward and from 1.8 to 8.4 mph in reverse. Drawbar horsepower is rated 111 with a maximum drawbar pull of 27,500 lb in first gear at 1.5 mph. The 74 in. gage tractor has an operating weight of 29,300 lb.

Clutch is dry-type with sintered metal facing, and a newly designed universal joint connecting clutch shaft to transmission drive shaft is said to automatically correct for any power train misalignment through use. International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Curbing Machine Employs High Pressure Extrusion

A curbing machine recently introduced provides a new principle of material delivery that is said to eliminate clogging.

The new curber has a 6,000 lb extrusion force and lays up to 150 ft of 6 in. asphalt curb per hour with no sand packing required. Three standard forms are easily interchanged. Browning Manufacturing Co., San Antonio, Tex.

(*New Products continued p. 62*)

MANITOWOC
SECTIONAL BARGES

- For floating all sizes of lift cranes, clams, draglines and other contractors' equipment.
- Easily assembled or knocked down for moving by rail or highway.
- Sections can be assembled into numerous barge sizes.
- Spuds, deck fittings, loading ramps and other accessories available.

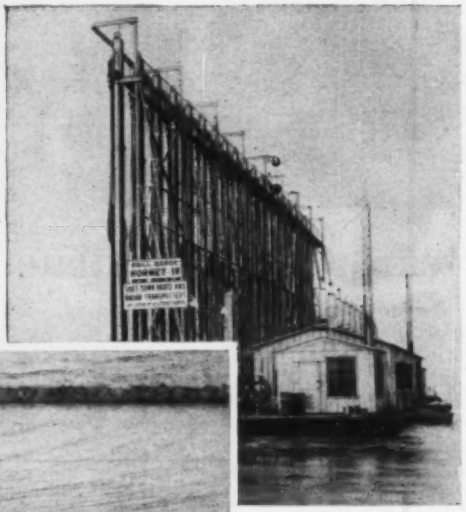
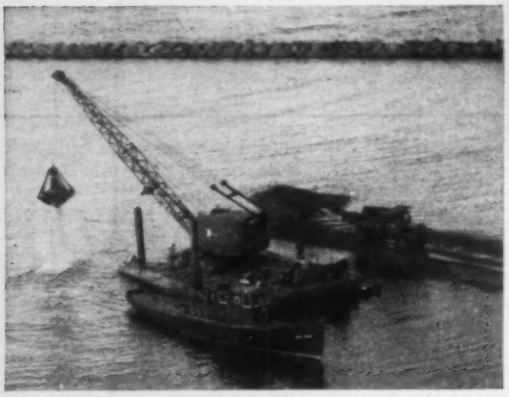


Photo to the right illustrates the drill barge HORNET IV used in the Amherstburg Channel deepening project by contractors Marine Operators of Windsor. This 20 drill rig including compressors and diesels is mounted on a 160' x 30' sectional barge made up of 11 sections. 40 foot spuds are used to position the barge.



A clam operation off the rock bound shore of Lake Superior. The crane is mounted on a 4 section barge which was transported by highway to the site.

PORTA-FLOATS

• THE FLOAT WITH A 1000 USES •

The Manitowoc Porta-Float is the smaller version of the sectional barge. The standard basic float is 32' x 8' x 4'. Units can be pinned together to make a wide variety of sizes and arrangements. Economical and versatile for floating all types of contractors' equipment. Ideal for floating docks, piers, etc. Porta-Floats are easily transported on trucks as illustrated below.

PORTA-FLOATS & SECTIONAL BARGES *MANUFACTURED BY*

MANITOWOC SHIPBUILDING INC.
MANITOWOC, WISCONSIN

Please write for additional information and prices
Sold direct or through Manitowoc Engineering Corporation distributors.

. . . New Products

Bulk Storage Silo Gives Freer Flow of Material

Bulk storage silos now on the market are designed to give more economical and efficient bulk cement and free-flowing granular materials' handling.

They're made of prefabricated corrugated galvanized steel with double bolted vertical seams for maximum strength and weather-tight protection. The E/E "Corgal" silos are said to insure fast, easy flow of material. The silos are available in 6, 9 and 12 ft diameters with capacities from 29 to 413 bbls. ENGINEERED EQUIPMENT, INC., WATERLOO, IOWA.

. . . New Product Briefs

• **Steel tape**—Known as "Dial-50", this new steel measuring tape features a simple two piece Styrene case reported to be just about unbreakable. JUSTUS ROE & SONS, INC., PATCHOGUE, N. Y.

• **Pinchless chain saw**—A feature of the Remington GLP 14 chain saw is its 14 in. bar with a tapered inside edge, which completely eliminates pinching, according to the manufacturer. It is equipped with a 5 hp gasoline engine. MALL TOOL CO., DIV. OF REMINGTON ARMS CO., INC., BRIDGEPORT, CONN.

• **Panel saw**—The Automatic MA-P panel saw now is available with an additional motor to retract the saw carriage at high speed after completion of a slow cutting pass. HENDRICK MFG. CORP., MARBLEHEAD, MASS.

• **Portable masonry saw**—"Port-a-Saw" is the name of a new lightweight masonry saw that one man can load in the trunk of an auto. It is equipped with either ½ or 1 hp motors. Wet-cut accessories are available. ROBERT G. EVANS CO., 6024 TROOST, KANSAS CITY 10, MO.

• **Rust preventive**—"Arrust" is a fish oil base penetrating coating containing a specially formulated rust inhibitor. The manufacturer says it acts as both a prime and finish coat, and can be used directly over firm rusted surfaces without peeling or flaking. ARTED CO., 141 WEST 53 ST., NEW YORK 19, N. Y.

• **Highway lighting**—Shows highway pole designs in both steel and aluminum with various sign-mounting arrangements. 24 page booklet, "Monotube Poles for Highway Lighting and Signing," Folder LS-23. UNION METAL MANUFACTURING CO., CANTON 5, OHIO.

Roebling Presents

THE NEWEST CONCEPT IN WIRE ROPE

*Herringbone**

two ropes in one!

Here is a combination that has proved itself during three years of field testing. A welcome addition to Roebling's great line of wire ropes, Royal Blue *Herringbone* is both a regular lay and lang lay wire rope!

So, in one rope you have the greater flexibility and abrasion resistance of lang lay construction *plus* regular lay's superior stability under severe operating conditions.

Preformed Herringbone is made of two *pairs* of lang lay strands, and two strands of regular lay which separate the two pairs of lang lay—all of it made of Type 1105 rope wire.

For three years Herringbone has been used for general hoisting, holding and closing lines, shovel ropes, wagon scraper ropes and dragline ropes. Without reservation, its performance has been superior to that of any other rope used for the same jobs . . . even in the hands of inexperienced personnel! *Its proven capabilities clearly suggest its use for all jobs where steel core ropes are normally used.*

See your Roebling salesman for all the facts or write Wire Rope Division, John A. Roebling's Sons Corporation, Trenton 2, New Jersey. Roebling Herringbone, the two-in-one rope to meet the *doubly* stringent demands of today's economy.

ROEBLING

Branch Offices in Principal Cities
Subsidiary of The Colorado Fuel and Iron Corporation

**Reg. app. for*

HERRINGBONE
WIRE ROPE

Onan ELECTRIC PLANTS

ELECTRIC PLANT NEWS

Onan ELECTRIC PLANTS

3,000 watts

New Onan all-purpose Diesel plant cuts electric power costs in half!

Lower fuel cost, less maintenance, and longer life cut power generation costs with the Onan 3DSL to half that of small gasoline-powered electric plants. For applications requiring an almost continuous supply of electric power, this new plant gives dependable service *season after season.*

Lighter weight and Vacu-Flo cooling

The new 3DSL is powered by an Onan single-cylinder, air-cooled full-Diesel engine. Available in all standard A.C. voltages and also as a 32-volt battery charger. Vacu-Flo cooling, permitting enclosed installations, is standard. It has a new mounted muffler, more efficient dry-type air filter, new geared crank, and it's hooded for protection on the job. Smoother-running, lighter weight, and compact.

New low price makes it an even bigger value . . . allows you to "go Diesel" for more of your power generation needs. For jobs requiring more capacity ask your distributor about the Onan 5DRP, two-cylinder, air-cooled, 5,000-watt Diesel.

Onan gasoline-powered plants: Air-cooled — 500 to 10,000 watts A.C. Water-cooled — 10 to 150 KW.

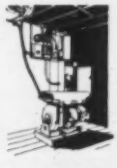
Handier . . . for more jobs!

Take it anywhere

Weighs only 470 pounds Haul it to the job in pick-up truck or on Onan's high speed, fully-enclosed trailer.

Operate it anywhere

New steel turret hood protects plant against weather and abuse on the job. All-climate insulated generator.



Install it anywhere

Vacu-Flo cooling permits enclosing the 3DSL completely. Automatically ventilates compartment.

Call your Onan distributor or write for information

D. W. ONAN & SONS INC.

2902A University Ave. S.E., Minneapolis 14, Minnesota

ELECTRIC PLANTS • AIR-COOLED ENGINES • KAB KOOLER • GENERATORS

Onan ELECTRIC PLANTS

Publications

Wire rope—Handling, storage, preparation, proper use on the job and how to order the right rope for the right job. 36 page handbook. WIRE ROPE CORP. OF AMERICA, 609 N. 2ND ST., ST. JOSEPH, MO.

Casters, wheels, guides—Condensed catalog with instructions for proper application to use in industry, institutions, offices, stores and homes. 20 page catalog, 157-G. FAULTLESS CASTER CORP., EVANSVILLE, IND.

Steel sheeting—"Steel Sheeting for Trenches, Cofferdams, Cutoff Walls and Shore Protection" sets forth physical properties, driving data and a method of figuring size and spacing of wales and struts for flange and interlocking sheeting. 12 page Catalog SH 4658. ARMCO DRAINAGE & METAL PRODUCTS, INC., MIDDLETOWN, OHIO.

Concrete equipment—Vibrators, grinders, trowels and screeds. 20 page Catalog 580. STOW MANUFACTURING CO., 443 STATE ST., BINGHAMTON, N. Y.

Automatic transfer switches—Choice and application in electrical design. 24 page Booklet 596RI. AUTOMATIC SWITCH CO., FLORHAM PARK, N. J.

Metal stitching—How to stitch metal to metal or other materials. Recommended systems. 16 page booklet. ACME STEEL CO., 135 ST. AND PERRY AVE., CHICAGO 27, ILL.

Back blocking for wallboard—New patented system for wallboard erection that will be licensed to builders and contractors. 7 page brochure. U. S. GYPSUM CO., 300 W. ADAMS ST., CHICAGO, ILL.

Ceiling design—Twenty-two minute sound and color film on acoustical design. Sound treatment, structure, fire protection. U. S. GYPSUM CO., DEPT. #136, 300 W. ADAMS ST., CHICAGO, ILL.

Computer programming — Simplified method of programming the Bendix G-15 electronic digital computer, known as Intercom 1000, is described. 4 pages. BENDIX COMPUTER DIV., 5630 ARBOR VITAE ST., LOS ANGELES, CALIF.

Prestressed piles—Design, construction and installation of prestressed concrete cylinder piles. 26 page Catalog CP-3, with diagrams and photographs. RAYMOND INTERNATIONAL, INC., 140 CEDAR ST., NEW YORK 6, N. Y.

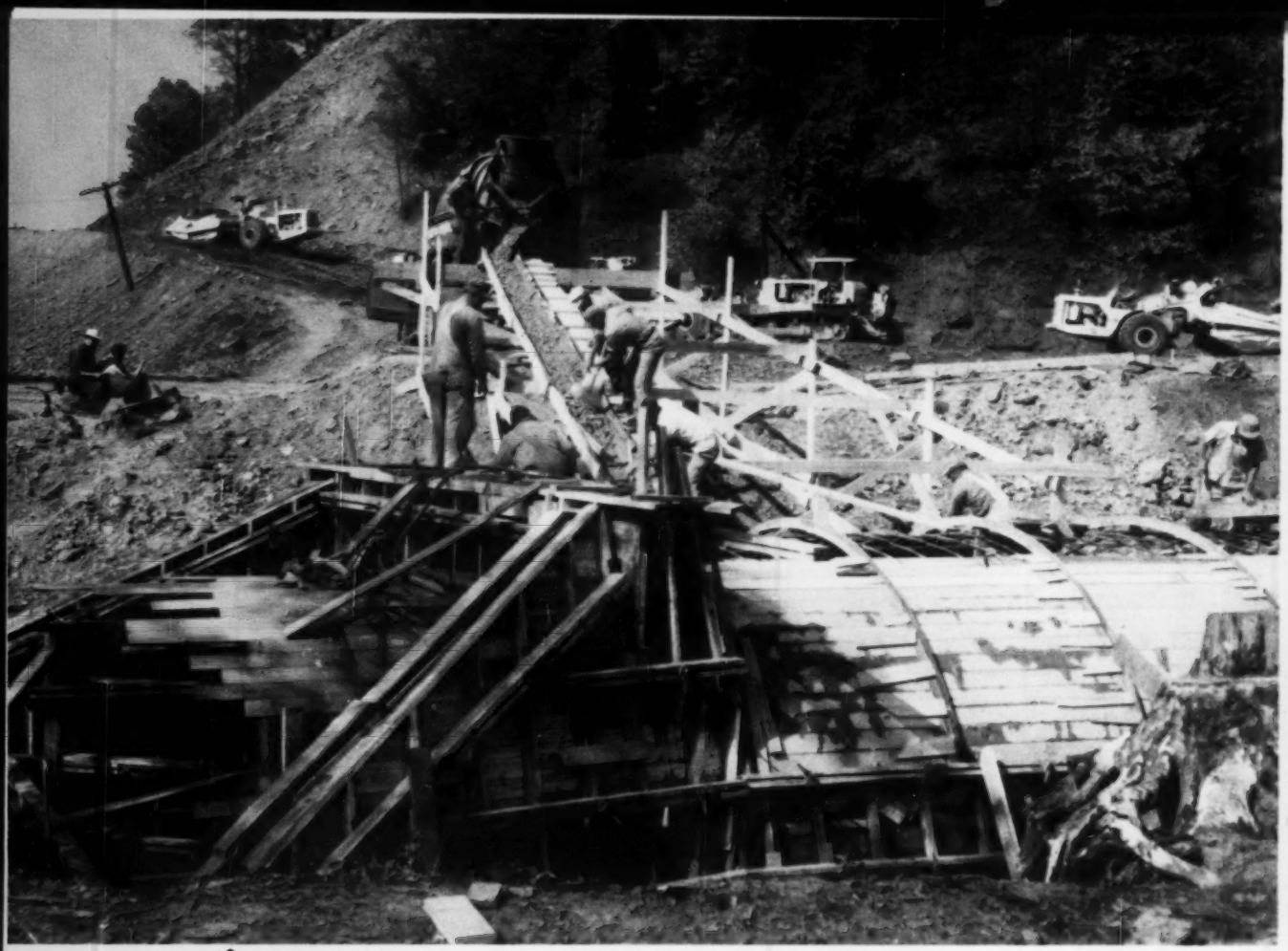
(*Publications continued p. 69*)

"We're extremely well satisfied with Gulf. Can't beat the products . . . or the service," says the job superintendent of S. Gavlik, Contractor, of Glenwillard, Pennsylvania. Standing above are (left to right): A. Tietjen, Superintendent; R. S. Garrison, Assistant Superintendent; H. H. Hossler, Gulf Representative; S. Gavlik, General Contractor.

Take it from leading contractors . . .

GULF MAKES THINGS RUN BETTER!

GULF



Water barrier goes underground. When a creek obstructs a 3½-mile road project, move the creek! That's what S. Gavlik, Contractor, did to relocate Route 422 near Indiana, Pennsylvania. The project, let under the Federal Highway Program, included three sub-surface concrete structures to carry off surplus water from the creek. Photo above shows concrete being poured for one of the three sub-surface structures. S. Gavlik is a long-time Gulf user.

Moving a creek . . . building a road . . . dredging a channel—

GULF MAKES THINGS RUN BETTER!

You can better your operation three ways when you depend on Gulf for your fuels and lubricants.

- You're sure of prompt delivery. 1500 strategically located warehouses—in 32 states—provide an unfailing supply of the fuels and lubricants you need.
- Your Gulf Sales Engineer will be on the job to help your operating and maintenance men get most efficient use of petroleum products. And he's backed by 1300 Gulf scientists and engineers at Gulf Research Center.
- Gulf quality fuels and lubricants insure best performance from your equipment—help you avoid mechanical delays. You'll have a smoother running job . . . and lower operating costs . . . because Gulf makes things run better.

Re-routing a route. One of the early jobs to be let under the Federal Highway Act was the relocation of Route 66 at Mamont, Pennsylvania. This job, which involved building an overpass over Route 80, was awarded to Ralph Myers Contracting Corporation of Pittsburgh. In the photo above are H. H. Hossler, Gulf Sales Representative, and Marion Hoke, Superintendent of Ralph Myers Contracting Corporation, on the job site. Myers depends on Gulf products to prevent mechanical delays.

Digging the big ditch, underwater. The South Cornwall Channel, a vital link in the $900,000,000 St. Lawrence Power-Seaway Project, was dredged by S. J. Groves & Sons Company of New York City. Groves removed about 1,800,000 cubic yards. Tug and dragline used clean-burning Gulf diesel fuel.

Expediting excavations. Below: On the huge St. Lawrence Power-Seaway Project one of the many contractors who used Gulf products is the firm of Jack and Jim Maser, Excavators, of Lancaster, Pennsylvania. The photo below shows the late Charles Reynolds, Maser Project Superintendent, with Gulf Jobber John Pellegrino. Jack Nicholson, Gulf Sales Engineer, is at right.

2-million yard earth-moving job. In Spartanburg and Cherokee Counties, South Carolina, the P. C. Cochran Construction Company of York, S. C. contracted to improve Route 29. They moved over 2,000,000 cubic yards of earth in the process. Photo shows (left to right): Edley Lattimore, General Superintendent; P. C. Cochran, Owner, and H. H. Lane, Gulf Sales Engineer.

ON YOUR NEXT JOB . . . LARGE OR SMALL . . . GO GULF! AND RIGHT NOW, USE THE COUPON BELOW FOR MORE INFORMATION

GULF OIL CORPORATION
Department DM, Gulf Building
Pittsburgh 30, Pa.

- ☐ Send copy of "Gulf and Your Business"
- ☐ Send copy of the new "Contractors' Guide" (equipment operation and maintenance manual)

Name_____

Title_____

Company_____

Street_____

City_____ Zone_____ State_____

GULF

GULF MAKES THINGS RUN BETTER!

SP 9296

. . . Publications

Slings and fittings—Reference information showing charts, dimensions and rated loads. 40 page reference handbook covers more than 80 subjects. UNION WIRE ROPE CORP., 2100 MANCHESTER AVE., KANSAS CITY 26, MO.

Welding rods—Description giving advantages claimed for Amsco Nicro-Mang manganese steel electrodes. 4 page catalog. AMSCO, DIV. OF AMERICAN BRAKE SHOE CO., CHICAGO HEIGHTS, ILL.

Batch plants—Description and listing of specifications to enable bituminous mix producers to compare with other type plants on the market. 8 page illustrated brochure. PIONEER ENGINEERING, DIV. OF POOR & CO., INC., 3200 COMO AVE., SOUTHEAST, MINNEAPOLIS 14, MINN.

Transmissions—Provides useful data on the R-35, R-46, R-63, R-630, R-96 and R-960 RoadRangers for over-the-highway operations and the R-1150 and -1550 RoadRangers for off-highway service. 10 page illustrated booklet, Form No. 114. FULLER MANUFACTURING CO., KALAMAZOO, MICH.

Dredging equipment—Describing methods of land reclamation, including economics and mechanics of the operations. 12 page Bulletin 937, called "Turning Swamps into Dollars." ELLICOTT MACHINE CORP., BALTIMORE, MD.

Corrosion—"A Structure Inspection of The Marina Yacht Harbor Pier" describes the effects of salt water corrosion on wrought iron and steel after 73 years in the San Francisco Bay area. Report on wrought iron and steel. 18 page booklet. A. M. BYERS CO., BOX 1076, PITTSBURGH 30, PA.

Clutches—Description of the "Trig-O-Matic" overload release clutch that provides protection against damaging and costly overloads. 8 page Bulletin 304. CENTRIC CLUTCH CO., P.O. BOX 175, WOODBRIDGE, N. J.

Remote controls—An eight page catalog on the line of Crown Hydra-Trol Remote controls describes the operation and construction of these controls and typical applications. CROWN CONTROLS DIV., TRIMOUNT INSTRUMENT CO., 3119 W. LAKE ST., CHICAGO 12.

Waffle slab pamphlet—Design and size tables for two-way dome slab construction. 16 page Manual 4007. CECO STEEL PRODUCTS CORP., 5601 W. 26 ST., CHICAGO 50, ILL.

NOW...provide *COMPLETE* containment of water, wastes, brines and sludges with

SEALTIGHT **Hydromat** ASPHALT LINERS

Pre-fabricated "HYDROMAT" Asphalt Liners provide the ideal liner for all domestic, industrial and recreational facilities where the containment of water, wastes, sludges, brines, etc. demand a very efficient, economical and impervious lining material. "HYDROMAT" is quickly and easily installed as a monolithic liner with mechanically sealed joints . . . will expand and contract with soil movements without rupturing or breaking the seal. Installed over (exposed) or under earth, concrete, gunite, steel or other materials . . . provides the practical answer to the problem of re-lining old, cracked concrete or gunite linings. "HYDROMAT" may be safely used for the containment of potable water in clear well construction and its ruggedness and durability permit its use as a fully exposed lining in large reservoirs to depths exceeding 50 feet. "HYDROMAT" is available in three thicknesses, ½", ¼" and 5/32", in 4' widths and lengths up to 15' . . . longer lengths available on special request.

For complete installation and technical data write today for your copy of the "HYDROMAT MANUAL".

SEALTIGHT PRODUCTS FOR BETTER CONSTRUCTION

W. R. MEADOWS, INC.

16 KIMBALL STREET
ELGIN, ILLINOIS

W. R. Meadows, Inc.
16 Kimball Street, Elgin, Illinois

Gentlemen:

☐ Send my copy of the "HYDROMAT MANUAL".

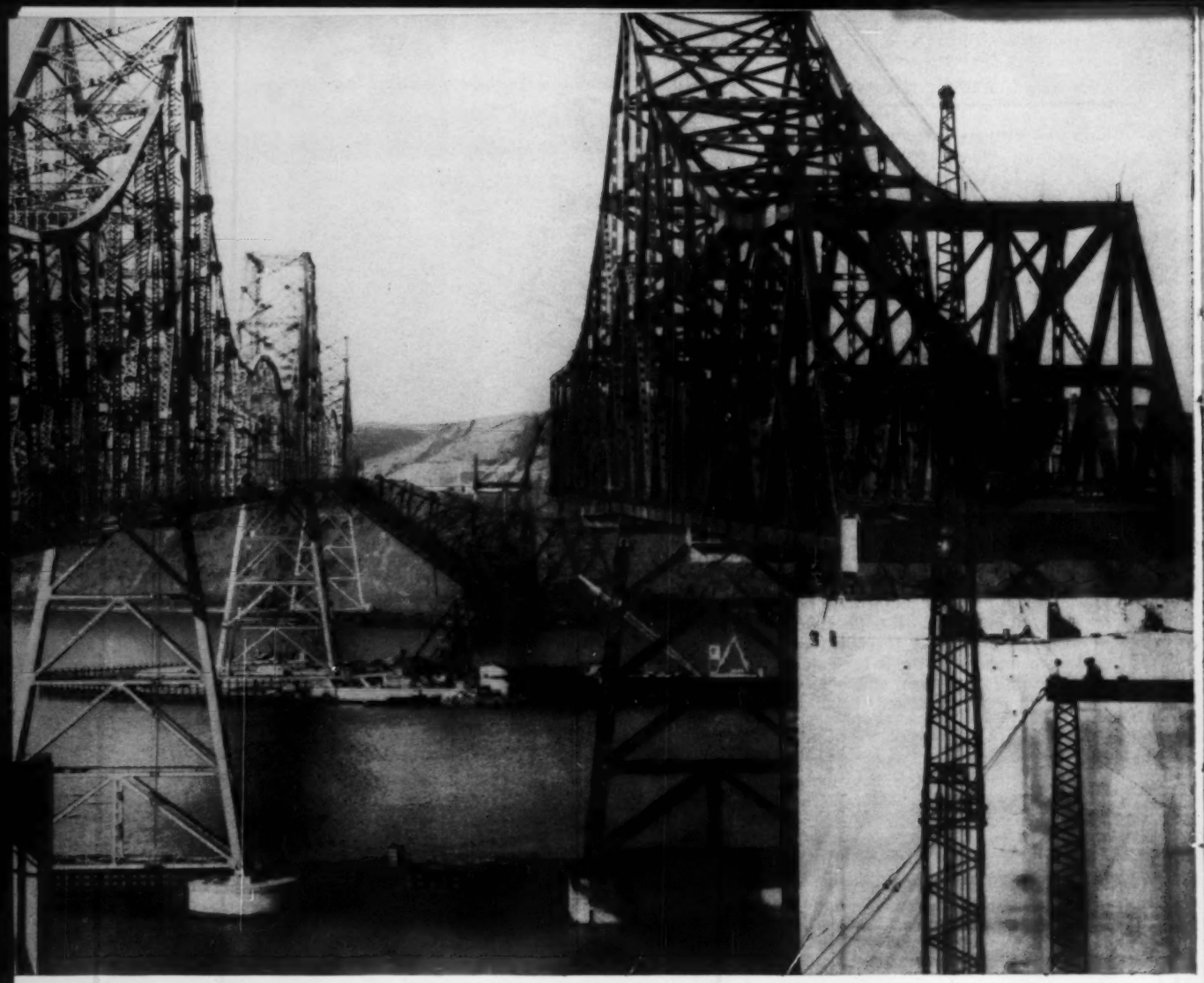
☐ Have representative call.

NAME_____ TITLE_____

FIRM_____

ADDRESS_____

CITY_____ STATE_____



USS "T-1" Steel Plate now furnished to 100,000 psi minimum yield strength

11% greater strength. USS "T-1" Constructional Alloy Steel can now be furnished to a minimum yield strength of 100,000 psi in plates up to 2½ inches thick. This is in addition to the present types of "T-1" Steel which are still available at a minimum yield strength of 90,000 psi. The new minimum tensile strength—the point at which actual breakage occurs when stressed in tension—has been increased from 105,000 to 115,000 psi. The published tensile strength maximum of 135,000 psi remains unchanged.

Weight reductions up to 50%—or more. Because of its great yield strength, three times that of structural carbon steel, USS "T-1" can be used to save weight in highly stressed members of bridges, TV towers and pressure vessels. Weight savings from 25 to 50% are common. For construction equipment, USS "T-1" Steel's strength, plus high resistance to impact abrasion, boosts payload capacity and increases equipment life.

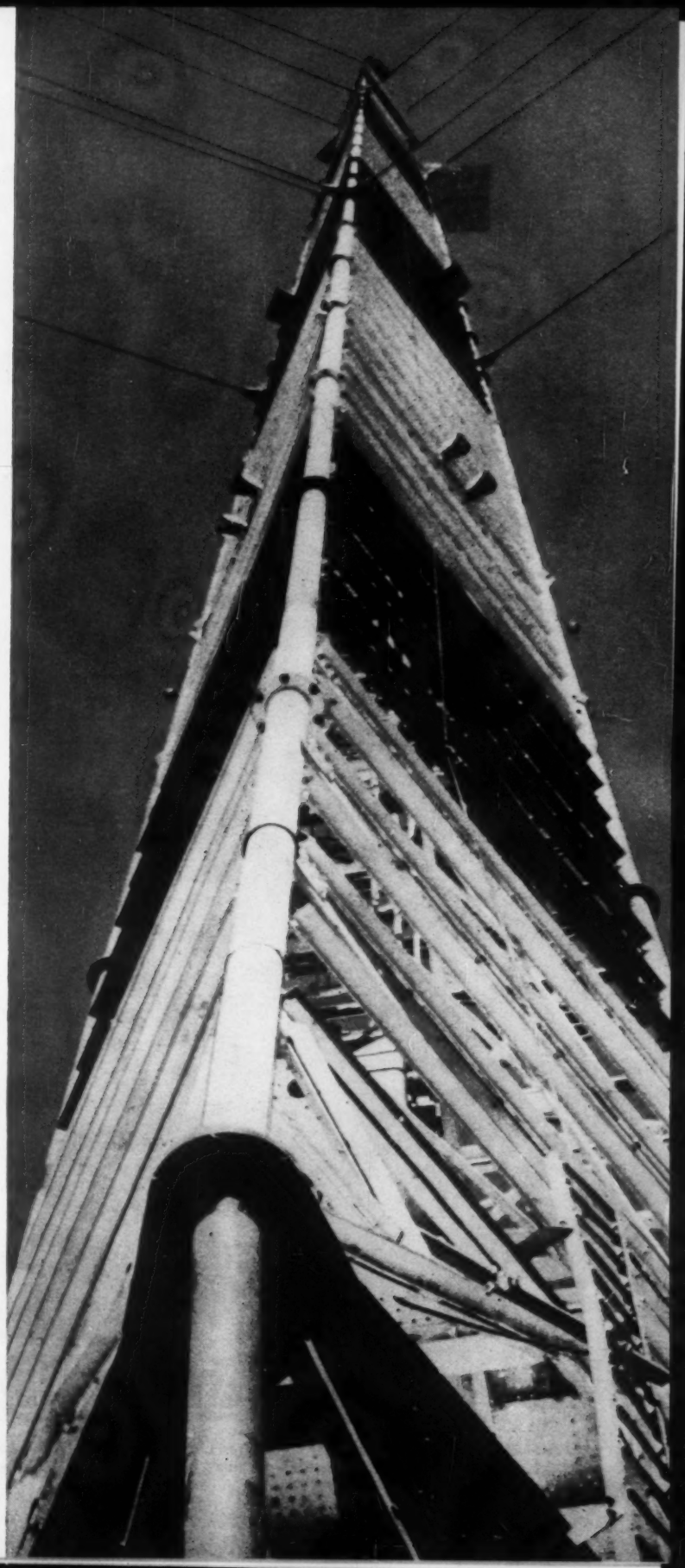
Cost savings up to 11%. The increase in strength at no extra cost amounts to customer cost savings up to 11%. Use of higher design stresses reduces the fabricating, welding and shipping costs because less material is needed.

The new strength data were arrived at after continuous tests on production lots of USS "T-1" Steel Plates at our Homestead Works. Actual experience confirmed the tests, and it became apparent that higher mechanical properties inherent in USS "T-1" Steel could be consistently developed. **Free book.** For complete technical information on USS "T-1" Steel, write to United States Steel, Room 2801, 525 William Penn Place, Pittsburgh 30, Pa.

USS and "T-1" are registered trademarks

USS "T-1" Steel saves $800,000. By using this stronger, weldable steel in the heavily stressed members of the New Carquinez Bridge in San Francisco, weight of some members was cut almost in half, with an overall savings of $860,000.

TV tower costs cut 15%. Because of its great strength, USS "T-1" Steel was used in the bottom 838 feet of this 1,199-foot TV tower. The cross-sectional area of the legs was reduced by 44%, resulting in a material and fabrication saving of 15%.



USS

United States Steel Corporation—Pittsburgh
Columbia-Geneva Steel—San Francisco
Tennessee Coal & Iron—Fairfield, Alabama
United States Steel Supply—Steel Service Centers
United States Steel Export Company

United States Steel

Clay Pipe solves infiltration in wet trenches

DESPITE extremely wet trench conditions, installation of a new sanitary sewer system at Beach Haven, New Jersey, was completed in record time with Vitrified Clay Pipe. More than 29,000 feet of Clay Pipe in 6, 8, 18, and 21 inch diameters were installed, yet the standard Weir test showed an infiltration rate far below specified requirements.

Easy installation and infiltration resistance are but two of the important features offered by Vitrified Clay Pipe. No substitute pipe can match its many advantages. Chemically-inert, it is completely resistant to the corrosive action of all sewerage gases and resulting acids. Its smooth, hard inner surface and new longer lengths insure smoother, faster flow so that the line handles its rated capacity continuously.

Vitrified Clay Pipe is the only pipe backed by a long-term written guarantee—your assurance of corrosion-proof service long after the last bond has been retired.

When you plan and install new sewerage facilities, don't be misled by the two or three advantages claimed by substitute pipe. Get all the advantages of longer, denser Vitrified Clay Pipe, with its tighter, time-saving, research-developed joints.

Engineer: William H. Boardman
Contractors: Canning & Cestone, Maplewood, N.J.

C 958-1

Vitrified **CLAY PIPE** *Never Wears Out*

NATIONAL CLAY PIPE MANUFACTURERS, INC. 1820 N Street, N. W., Washington 6, D. C.
311 High Long Bldg., 5 E. Long St., Columbus 15, Ohio • 783 Ninth & Hill Bldg., Los Angeles 15, California • P. O. Box 172, Barrington, Illinois • 296 Mark Bldg., Atlanta 3, Georgia

Corps of Engineers Hires Woman Engineer Trainee

Ruth Wilson is the first woman to enter the U. S. Army Corps of Engineers junior-engineer trainee program of the Mobile, Ala., Engineer District, and the only female graduate engineer currently employed in the district.

Miss Wilson, a native of Sebring, Fla., is also the first woman to receive a degree in civil engineering from Georgia Institute of Technology, Atlanta.

After about 18 months of training in different types of jobs at the Mobile District office, Miss Wilson will be ready for assignment to a regular civil engineering position.

Corey Named to Spark Waterworks Construction

The American Water Works Association has appointed James B. Corey director of its expanded public relations program to boost the volume of waterworks construction in the U. S.

Mr. Corey comes from the National Multiple Sclerosis Society. He will spread the waterworks message in cooperation with local section committees.

George J. Taylor Elected Head of Lighting Society

The Illuminating Engineering Society has elected a new president for the one-year term beginning October, 1958. He is George J. Taylor, vice president of Day-Brite Lighting, Inc., New York City.

Mr. Taylor previously was with General Electric Co. in Cleveland and New York, and was also a consulting engineer in New York. He succeeds Kirk M. Reid, senior illuminating engineer of General Electric Co., Cleveland.

Also elected to offices were: Richard G. Slauer, sales manager of the fixture division, Sylvania Electric Products, Inc., Wheeling W. Va.—vice president; James R. Chambers, sales manager, lighting products division, Appleton Electric Co., Chicago—general secretary; and G. Franklin Dean, superintendent, lighting services department, Toronto, Canada, Hydroelectric System—treasurer.

Careers

Business

Charles J. Jacobus has been appointed chief engineer for the Trojan Division of The Yale & Towne Manufacturing Co.

Ferdinand D. Bickel, technical specialist in du Pont's explosives department, has retired after serving the company for almost 30 years. Regarded as one of the world's top explosives experts, Mr. Bickel supervised or assisted in the planning of many spectacular blasts, the last of which was Ripple Rock in Vancouver, B. C. (ENR April 17, p. 26). A civil engineer graduate of the University of Wisconsin, he intends to continue working in the explosives field as a consultant.

The Toledo, Ohio, engineering firm of Jones, Henry & Williams has admitted the six following professional engineers into the partnership: **Harry E. Heck, Ellis M. Keeler, Harold A. Kelley, Coburn C. Metcalf, Cecil B. Russell** and **Roger W. Stevens.**

Norman L. Bryan has been made a partner in the architectural and engineering firm of Reynolds, Smith & Hills, Jacksonville, Fla. **Charles E. Richeimer** has retired as a partner, but will remain on the staff as a consultant.

Frank W. Bromley, William N. Woodruff and **Robert L. Norton** have been made partners in the firm of Hohannessen & Girand, consulting engineers, Pheonix.

J. A. Mecia and **C. W. Robinson** were elected vice presidents of Utah Construction Co. at a recent directors' meeting. Mr. Mecia was formerly the firm's manager of mines, while Mr. Robinson held the office of assistant secretary and treasurer.

H. R. Moorhouse, secretary and treasurer of Arthur G. McKee & Co., Cleveland engineering and construction firm, has been elected vice president.

Paul R. Smith has been elected a vice president of Hunkin-Conkey Construction Co., Cleveland, which he joined in 1946. He has been chief engineer of the company's heavy construction division since 1955.

Dewey S. Wright, city engineer of Denver, has joined Elk River Concrete

WHY

do you suppose leading architects, contractors and engineers have specified IRONITE® WATERPROOFING for over 50 years?

...**Because** it is a metallic water resistant compound.

...**Because** it is not merely an outer coating.

...**Because** its fine particles are carried in suspension in water and thus actually work their way into any and all voids or cavities in the concrete, brick or other porous surfaces.

...**Because** these particles then oxidize and expand to become a part of the mass to which the IRONITE Waterproofing is applied.

...**Because** it cannot scale, blister, crack or peel.

...**Because** removal is impossible without the destruction of the underlying surface.

...**Because** IRONITE Waterproofing has proved its ability to stand up indefinitely in some of the world's most famous buildings.

Used for:

Foundations
Basements
Catch Basins
Boiler Pits
Swimming Pools
Fuel Oil Tanks
Cable Vaults
Concrete Fences
Molasses Tanks
Hot Water Tanks
Settling Basins
Sewage Disposal Plants
Tunnels
Bank Vaults
Oil Tanks
Water Tanks
Concrete Bridges

Write for full information on how you can use Ironite Waterproofing on your construction job. IRONITE COMPANY, *Suite 729, 208 South LaSalle Street, Chicago 4, Illinois.*

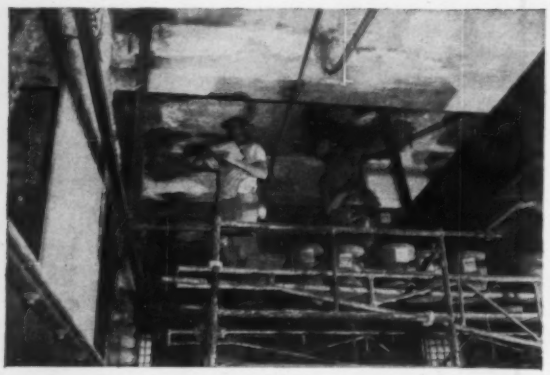
IRONITE COMPANY

® Registered Trademark

How THORITE and THOROSEAL made this underground structure sound again!

Workmen prepare old surface for patching with THORITE.

Water has entered the concrete and caused corrosion of reinforcing rods, blistering the concrete off surface and causing structural weakness throughout building.



Reinforcing was cleaned, all corrosion was removed and brush coat of THORITE applied over entire patching area, then filled in with trowel coats of THORITE, even with surrounding surfaces.

THORITE Patching Mortar sets in 20 to 30 minutes and can be coated with THOROSEAL while hardening.

"How to do it" GET OUR 16 PAGE BROCHURE

STANDARD DRY WALL PRODUCTS, INC.
NEW EAGLE, PENNA. CENTERVILLE, IND.

. . . Men and Jobs

Products Co., Helena, Mont. **C. E. Harness,** deputy city engineer, will succeed Mr. Wright in the Denver post.

Wayne Teng, formerly assistant chief structural engineer for Skidmore, Owings & Merrill, Chicago architects and engineers, joins John F. Meissner Engineers, Inc., Chicago, as head of the structural department. Educated at the National Central University of China, Mr. Teng holds both a masters and a Ph.D. degree in engineering.

William H. Mills has opened an office for the practice of civil engineering in Atlanta. He will specialize in soils and materials investigations, pavement design and construction, and construction operations analysis. He is affiliated with Miller-Warden Associates, Swarthmore, Pa.

Public Works

Meredith Johnson, New Jersey state geologist, retired June 30. He has been with the State Department of Conservation and Economic Development for 30 years and was chief of the Bureau of Geology and Topography.

Col. William H. Lewis, district engineer in New Orleans for the Army Engineers, has retired.

Clarence Shain has been appointed director of the Olympia, Wash., public works department. He is a former state highway director.

E. B. Gibbons, who has served as acting manager of the Grant County PUD in Ephrata, Wash., since the resignation of **Glenn Smothers,** has become manager.

Education

Ludwig Mies van der Rohe will retire this fall as director of the department of architecture at Illinois Institute of Technology. The 72-year-old architect, famed for his controversial modern buildings, will devote more time to his own architectural firm in Chicago. A native of Germany, he came to the U. S. in 1938 and has been on the IIT faculty since that time.

Associations

Walter C. Oram has been appointed paving engineer in the Rocky Mountain regional office of the Portland Cement Association. He was general field engineer at Seattle since 1955.

John P. Horgan retired May 31 as supervising field engineer for the U. S. Army Engineer District, New York.

E. B. Cape, president of the Gulf Bitulithic Co., of Houston, was named president of the Texas Highway-Heavy Branch of Associated General Contractors. He is also vice president of the contractors' division of the American Road Builders' Association.

A TOWERING USE FOR CANVAS—The several new buildings now under construction at Moisant International Airport are adding a distinctively modern touch to the New Orleans area. A striking example is this control tower, high above the new $7,000,000 terminal building. During its construction, the partially completed interior of the tower had to be protected while the contractors awaited delivery of special Thermopane® glass panels. For this purpose, the J. A. Jones Construction Co., contractors, employed a large number of all-weather tarps manufactured by The Foster Company of New Orleans and made from Mount Vernon Duck.

This is another example of how fabrics made by Mount Vernon Mills, Inc., and the industries they serve, are serving America. Mount Vernon engineers and its laboratory facilities are available to help you in the development of any new fabric or in the application of those already available.

UNIFORMITY Makes The Big Difference In Industrial Fabrics

Mount Vernon Mills, inc.

A LEADER IN INDUSTRIAL TEXTILES

TURNER HALSEY COMPANY
Selling Agents

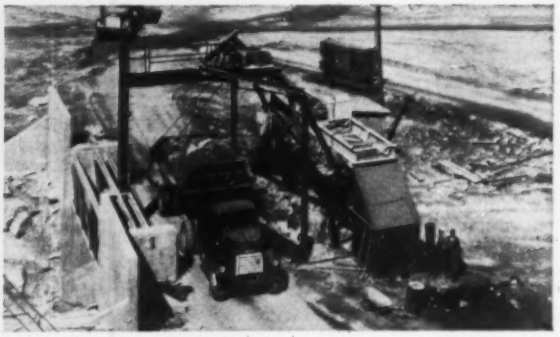
Main Office and Foreign Division: 40 Worth Street, New York, N. Y.
Branch Offices: Chicago • Atlanta • Baltimore • Boston • Los Angeles

"It takes a lot of truck to handle 25- to 30-ton loads!"

—says W. B. Couch, superintendent of the Campbell Limestone Co., Beverly, S. C., in reporting on their GMC Diesels

OFF-THE-ROAD HAULING THAT'S TOO HEAVY FOR LEGAL HIGHWAY TRAVEL is rugged business. Yet Campbell Limestone's GMC Diesels do this day after day—running 10-hour days in the summer. They've never required any pampering—even after the equivalent of 100,000 miles of this work. It's the pay-off on GMC's *all-truck* construction—as the world's largest exclusive commercial vehicle manufacturer can supply it.

SOME OF THE HUGE BOULDERS THAT HURTLE DOWN into Campbell's GMC's are half the size of a sedan. In fact, the specially built dump bodies are of 1-inch steel plate. And underneath is the GMC brand of super-stamina that shrugs off this kind of punishment—for years.



EVEN CLIMBING THE STEEP RAMPS with their huge loads is easy for these GMC's. They've got the power reserve to keep rolling where other trucks can't make the grade. You can thank those high-torque 2-cycle Diesels for that!

GMC TRUCK & COACH—*A General Motors Division*

GMC-America's Ablest Trucks *½ to 45 tons*

Obituaries

Walter B. Barrow, Jr., 66, head of a construction firm and formerly city public works commissioner of Raleigh, N. C.

Milton T. Smith, 57, former president and general manager of the Marion Power Shovel Co., Cleveland. He had retired from the company this year and moved to Charlottesville, Va.

Joseph A. Tomsic, 55, engineer of Division 3 of the Ohio State Highway Department. He graduated from Ohio State University in 1926 and had been with the highway department since that time.

Charles Shutrump, 88, founder and president of the Charles Shutrump and Sons Co., Youngstown, Ohio.

K. F. Brooks, 75, president and general manager of the Brooks Construction Co., Fort Wayne, Ind. His firm built the first concrete road in Indiana.

D. Franklin Quillen, 59, Delaware builder and head of D. F. Quillen & Sons. He entered the contracting business in 1925.

Karl G. Andriessen, 55, resident engineer with the North Carolina Highway Department. A native of Germany, he came to the U. S. in 1920 and worked in New Jersey before moving to North Carolina.

Ward W. Gross, 55, owner of Gross Construction Co., Louisville. Originally from Dayton, Ohio, he specialized in marble construction.

Henry H. Page, 72, Dallas builder and founder of the Page and Allen Construction Co., Dallas. Mr. Page was superintendent of construction on the tower for the first atomic bomb exploded at White Sands Proving Grounds, N.M. In Dallas, he supervised construction of the North Dallas high school, the Gulf States Building, and numerous office buildings, apartment houses and homes.

Harry C. Carpenter, 69, civil engineer of Middletown, N. Y.

Jesse Larimer, 81, retired construction engineer. He had been employed at the Philadelphia Naval Base until his retirement in 1944.

Romolo J. Ciccone, 48, civil engineer and 1934 graduate of the University of Pennsylvania.

. . . to plan and build a Texas Tower. It also takes modern thinking, skill and know-how to provide the bonds required by bold new construction ventures.

THE FIDELITY AND CASUALTY COMPANY OF NEW YORK continues, year after year, to keep pace with progress—providing all kinds of bonds and insurance—for all types of construction projects —in all parts of the world.

The Fidelity and Casualty Company of New York

"Writing Bonds Since 1876"

A Member Company of America Fore Loyalty Group

The new lift span on the Celilo Bridge over the Columbia River is being raised to permit river passage. Westinghouse supplied all the major elements of the electrical system, which can raise the span to 75 feet above mean high water in 90 seconds.

Sid Brown, Westinghouse sales representative, at right, is shown discussing approval of electrical control system with Mr. Don Thomas, assistant engineer of structures for Spokane, Portland and Seattle Railway; Mr. Glen Emory and Mr. Ed Bohm, partners of Emory and Bohm, electrical contractors.

Celilo Railway Lift Bridge uses new Westinghouse static skew control

When construction of the Dalles Dam caused the Columbia River to rise closer to the deck of the Oregon Trunk Railway's Celilo Bridge, it became necessary to build a lift span to let river traffic pass beneath. A Westinghouse d-c adjustable-voltage drive, incorporating static skew control, was installed to provide smooth acceleration and a precise regulating system to keep the span level.

Set between two towers, the span is counterweighted and suspended by wire ropes passing over sheaves at the top of each tower. Two Westinghouse d-c mill motors in each tower drive the sheaves and are electrically synchronized by the d-c adjustable-voltage system to keep the span level when operating. The various operations are so interlocked that they must follow a predetermined sequence to assure maximum equipment and personnel safety. The skew control equipment has safeguards against abnormal conditions and requires minimum maintenance.

Westinghouse equipment used on the Celilo Bridge includes: the main d-c drive motors, brakes, motor-generator, control regulating exciters, control board, an operator's console, emergency drive a-c gearmotors and a 225-kva outdoor power center.

Westinghouse, as sole supplier of the coordinated electrical system, assumed undivided responsibility for its overall operation. For further information showing how this complete, single-source supply can benefit you, contact your Westinghouse electrical construction engineer, or write: Westinghouse Electric Corporation, Box 868, Pittsburgh 30, Pennsylvania. J-94116

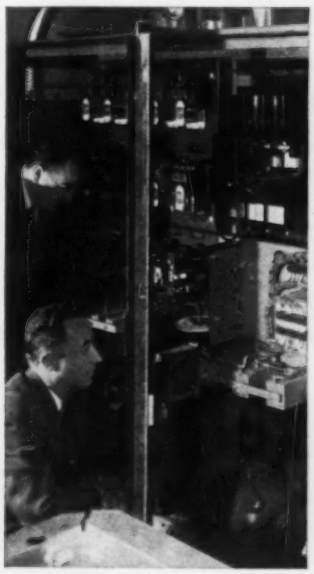
Owner: Oregon Trunk Railway (Operated by Spokane, Portland & Seattle Ry.)
Consulting Engineers: Howard, Needles, Tammen & Bergendoff, Kansas City, Mo.
General Contractor: Kansas City Bridge Co., Kansas City, Mo.
Steel Fabricators: Pacific Car & Foundry Co., Seattle, Wash.
Electrical Contractor: Emory and Bohm, Portland, Oreg.
Westinghouse Distributor: Westinghouse Electric Supply Company, Portland, Oreg.

Over 250 Pages Westinghouse Data in Sweet's Construction File.

YOU CAN BE SURE... IF IT'S

Westinghouse

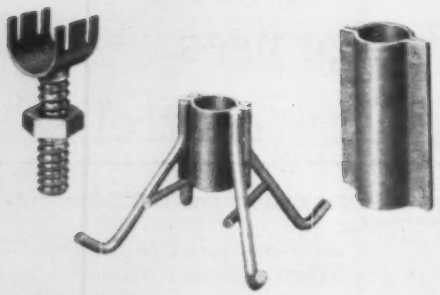
Chief operator, Champ King, at Westinghouse control desk. This desk centralizes the starting and stopping of railway traffic, selection of normal, auxiliary or emergency power supply, normal or emergency drive system and control of the lock and lift span.



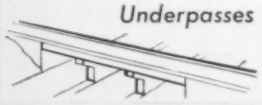
Mr. Brown and Mr. Thomas inspect the interior of the main control cabinet which houses the Magamp* regulator panel and Rototrol® elements of the bridge control system.

*Trade-Mark

Mr. Bohm and Mr. Thomas examine the Westinghouse 33-hp Type MCA d-c mill motors, designed for heavy intermittent duty, which drive the main span machinery located at top of each tower.

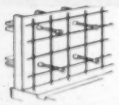


HEAVY-DUTY SCREED SUPPORTS



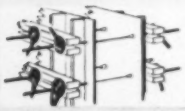
Overpasses and Underpasses

THREADED COIL TIES



Engineering Structures

TILT LOCK CLAMPS



Heavy-Duty Forming

4-STRUT COIL ROD ANCHORS

Temporary or Permanent Anchorage

SUPERIOR

One Source For All Accessories For Dependable Concrete Forming

These are examples of the numerous types of form ties, anchors, inserts, and other items in Superior's most complete line of concrete accessories. The illustrations show the variety of concrete form work and related jobs in which Superior accessories are used. All items are designed to provide the most dependable and efficient forming methods.

WHENEVER YOU ARE PLANNING FORM WORK... Superior's technical assistance is available to prepare suggested layouts. Call or write to nearest address shown below.

SUPERIOR CONCRETE ACCESSORIES, INC.

9301 King St., Franklin Park, Ill. *(A Suburb of Chicago)*

New York Office
1775 Broadway
New York 19, N. Y.

Pacific Coast Plant
2100 Williams St.
San Leandro, Calif.

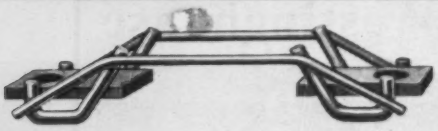
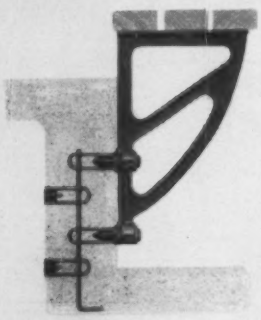


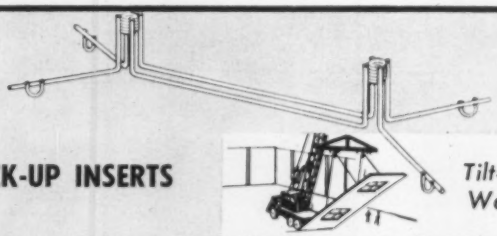
PLATE HANGER FRAMES

Bridge Superstructures



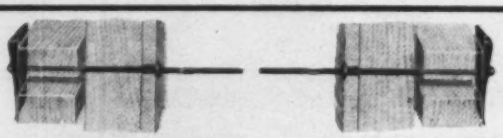
RISER-FRAMES

Stadiums and Grandstands

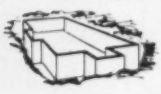


PICK-UP INSERTS

Tilt-Up Work



SNAP TIES



Ordinary Foundations

Legal

Architect Approval

Will not be implied if not required by contract

If the specifications do not require the architect's approval of products to be used, the necessity of such approval will not be implied.

The rule was applied by a federal court against a contractor that had sought to use an architect's disapproval of a product as a defense against a breach of contract action.

The contractor was Kahn Construction Co., which was erecting a building for the Medical College of South Carolina.

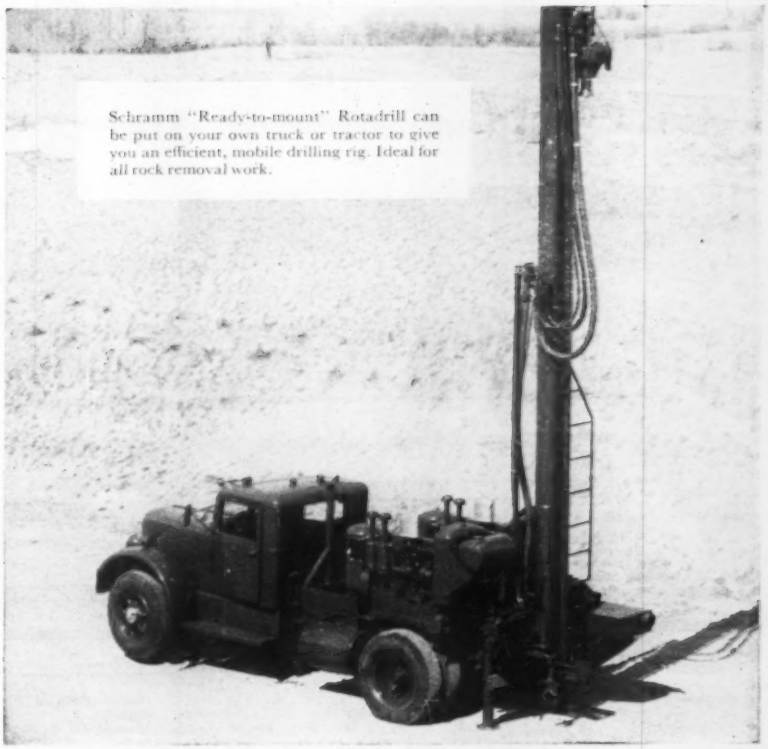
It ordered reversible window sash from Davies Reversible Window Products. Later it canceled the order, giving two reasons: The architect did not consider Davies' product equal to that specified and did not approve Davies as a subcontractor.

Davies sued Kahn for breach of contract. Kahn contended that the order was conditional on the architect's approval and that no firm contract resulted.

Although the trial court sustained the defense and dismissed the action, the appellate court reversed the judgment and said:

"Assuming that the specifications are by reference fully incorporated into and made a part of the order, nowhere do we find in them support for the defendant's claim that the subcontractor needed the architect's approval. Such provisions are not unknown in building contracts, but they cannot be implied as a matter of law. Building contracts and accompanying specifications, like other documents, are to be construed according to their terms. 9 Am. Jur., "Building and Construction Contracts", Sec. 7, p. 8; Werbin, Legal Phases of Construction Contracts (1956), p. 222. The agreement of the parties is not to be extended beyond its terms, nor is omitted matter to be supplied, unless necessary to give effective meaning to the language used. We hold, in respect to the specific ground recited in the August letter of cancellation, that there was no requirement that the subcontractor be approved by the architect.

"The defendant (Kahn) also makes the slightly varient contention that the plaintiff's (Davies) window sash itself required the architect's approval, and that as no such approval was given, there has been no compliance with a condition of the contract, notwithstanding that the specifications have been strictly ad-



Schramm "Ready-to-mount" Rotadrill can be put on your own truck or tractor to give you an efficient, mobile drilling rig. Ideal for all rock removal work.

NEW SCHRAMM "READY-TO-MOUNT" ROTADRILL . . .

Cuts contractor's rock removal cost.

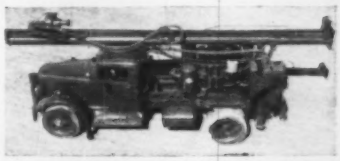
Here's a complete drilling package that mounts on your own truck or tractor (D-6 or D-8) and makes it an efficient rig for the newest of drilling techniques. This rotary drilling unit can be converted easily for bottom-hole percussion drilling in hard rock with the Schramm Rotatool. It makes your used vehicle a valuable new piece of equipment for a small capital investment.

The Schramm "do-it-yourself" kit can be furnished for mounting by the contractor—can be put on your vehicle by your Schramm dealer—or can be installed at the factory. Select the means best suited to your situation and you'll end up with a drill rig that will cut your cubic yard cost on rock removal work.

Schramm's "ready-to-mount" package has all the features that make Rotadrills the most efficient drill rigs available. Three-speed, top-head rotation . . . 4½" holes for more economical blast patterns . . . one-man operation . . . hydraulic controls . . . choice of one 250 cfm compressor or two 125 cfm units—gasoline or diesel—to provide 250 cfm at 100 psi.

Learn how you can cut your rock removal cost. Write for full details on the Schramm "Ready-to-mount" Rotadrill.

See the Yellow Pages for Sales, Service and Rental of Schramm Air Compressors and Rotadrills.



Rotadrill on truck makes compact, self-propelled unit. Mast has 22 foot travel.

Schramm Rotatool converts Rotadrill for fast bottom-hole percussion drilling in hard rock. Conversion from rotary drilling to Rotatool is quick and easy.

Schramm, Inc.

MANUFACTURERS OF AIR COMPRESSORS

620 North Garfield Ave. • West Chester, Pa.

Reduce Weight with Voided Concrete Slabs

Middleville Road High School, Northport, L. I., N. Y.
Ellis Chingos Construction Corp., general contractors.
Severud, Elstad, & Kruger, structural engineers.
Ketcham, Gina & Sharp, architects.

Form voids with low-cost

SONOCO

SONOVOID®

FIBRE TUBES

in concrete roof and floor slabs

The circular concrete roof slab for the library building of the Middleville High School weighs less because it is voided with SONOVOID Fibre Tubes.

Weight reduction is only one of the many advantages of voided concrete construction. Voided roof and floor slabs have smooth undersides to which paint or plaster can be applied without the necessity of constructing a dropped ceiling.

These and other features all add up to the fact that concrete members, voided with low-cost SONOVOID Fibre Tubes, save time, money and materials.

Use these tubes in bridge decks, floor, roof and lift slabs and in concrete piles . . . precast units or units cast in place.

Order in sizes from 2.25" O.D. to 36.9" O.D. Unless other lengths are specified, shipments will be made in standard 18' lengths. End closures available.

See our catalog in Sweet's

For complete information and prices, write

- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
- LONGVIEW, TEXAS
- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D.F.

SONOCO
Construction Products

3096 SONOCO PRODUCTS COMPANY

hered to in regard to labor, material, size, quality, etc. We do not read the specifications so broadly. It is true that the specifications require the architect's approval where equivalents are offered by the contractor in substitution for materials that have been specified by brand name. This window sash, however, was not specified by brand name. The specifications contain a description of what was to be supplied, and it is not disputed that the plaintiff's sash met the description."

The court further stated: "As to approval of the product, we hold that unless authorized by the contract, an architect has no inherent power to insist on an article of particular manufacture, not specified in the contract, over one that in all respects responds to the contract. If an architect nevertheless insists upon his 'preference,' when the subcontractor's article is in full compliance with his contract, the contractor is not legally bound by the architect's preference. If the general contractor, in such a case, sees fit, as a matter of business policy, not to oppose the architect's insistence, he is not thereby relieved of his contractual obligation to the subcontractor who supplies precisely what was ordered from him. He may not, to save himself unpleasantness, sacrifice the subcontractor."

(1) Davies v. Kahn, 251 F. 2d 324, United States Court of Appeals, Fourth Circuit, January 6, 1958.

Court Gives Precedence To Arbitration Clause

A contract clause requiring arbitration of a dispute precludes the right to take the dispute to a court of law.

In a New York case, for example, a general contractor applied to a state court to force a subcontractor to foreclose a lien it had filed or to get it discharged.

The subcontractor asked the court to stay the proceeding and to require arbitration of the dispute.

The court granted the subcontractor's application,[1] holding that where the substance of the issue to be litigated in any action to foreclose a lien is subject to arbitration under the contract, the right to arbitration has priority over the commencement of an action to foreclose the lein.

(1) Lizza & Sons, Inc., v. De Lillo Construction Co., 171 N.Y.S. 2d 768, N. Y. Supreme Court, Nassau County, January 20, 1958.

Liquidated Damages

Issue discussed in case of delayed performance

A contract clause calling for liquidated damages for delayed performance will be enforced unless the amount specified constitutes a penalty. The contractor has the burden of proving that it is a penalty.

A federal court has ruled that damages in the amount of $40 a day was not excessive enough to constitute a penalty in the following case.

A contractor brought an action to recover the amount claimed to be due for performance of a construction contract.

The party for whom the work was being done counterclaimed liquidated damages at the rate of $40 per day for delayed performance, the contractor not having completed the work until 30 days after the date set in the contract. The contractor was allowed a recovery, less $1,200 damages for delayed performance.

The court[1] stated: "The court rules as a matter of law that the provision in the contract for the payment of liquidated damages in the event that the project was not completed on or before July 1, 1955, was a lawful provision and that it ought to be enforced within reason. This was a public contract and it was highly proper for the Board of Supervisors to provide for liquidated damages in the event of failure to complete it on time. It is, of course, practically impossible to determine in advance the actual damages which may be sustained to the public on account of a failure to timely complete a public work of this nature. The court finds that the provision for $40 per day is a fair approximation of such damage, and that the provision in the contract is therefore legitimate and lawful and it not to be interpreted as a penalty. The burden is on the contractor to show otherwise."

(1) Korshoj v. Mills County, Iowa, 156 F. Supp. 138, U.S. District Court, Nov. 4, 1957.

These summaries of court decisions are prepared by I. Vernon Werbin, Esq., New York attorney and licensed professional engineer, who is author of the following books published by McGraw-Hill Book Company, Inc.: *Legal Phases of Construction Contracts; Legal Guide for Constructors, Architects and Engineers; and Legal Cases for Contractors, Architects and Engineers.*

Speed up Construction with Round Concrete Piers

Overpass, intersection of Routes 77 and 12, Sioux City, Ia.
Designed by Iowa State Highway Commission.
Hobe Engineering Company, contractors.

Form round concrete piers with low-cost, time-saving

SONOCO Sonotube® FIBRE FORMS

SONOTUBE Fibre Forms are time and money savers for contractors because they are lightweight, handle easily and require minimum bracing. That means fewer man-hours on the job!

The 16'8" piers for the project illustrated were formed by 36" I.D. SONOTUBE Fibre Forms.

These forms provide the fastest and most economical method of forming round columns of concrete and have saved time, labor and money for contractors everywhere.

For buildings, bridges, overpasses . . . in fact, any structure where a round column of concrete is to be formed . . . there's a Sonoco SONOTUBE Fibre Form to meet the need.

Order in sizes from 2" to 48" I.D. Unless other lengths are specified, shipments will be made in standard 18' lengths. Choose from 3 types: Seamless (pat. pend.), patented "A" coated (standard form for finished columns) or "W" coated.

See our catalog in Sweet's

For complete information and prices, write

- HARTSVILLE, S. C.
- LA PUENTE, CALIF.
- MONTCLAIR, N. J.
- AKRON, INDIANA
- LONGVIEW, TEXAS
- ATLANTA, GA.
- BRANTFORD, ONT.
- MEXICO, D.F.

SONOCO Construction Products

3097 **SONOCO PRODUCTS COMPANY**

It's open season on new construction business . . .

with DODGE REPORTS to track down your live prospects

A good nose for construction news is a big asset to any contractor. But you can't hope to corner *all* your prospects . . . just at the moment they're active . . . no matter how many doorbells you ring or how many rumors you chase.

Dodge Reports lead you straight to in-the-market prospects, so you can concentrate your efforts where they'll pay off.

What are Dodge Reports? They're daily notices – mailed directly to you – telling in advance who is going to build what and where . . . anywhere in the 37 eastern states.

You specify the area and types of jobs you want to cover. Dodge tells you whom to see and when to bid – even who else is bidding – on all phases of construction.

WRITE FOR FREE BOOK

F. W. Dodge Corporation, Construction News Division,
119 West 40th Street, New York 18, N. Y., Dept. 10098

Send me the book "Dodge Reports—How To Use Them Effectively" and let me see some typical Dodge Reports for my area. I am interested in the markets checked below.

☐ House Construction ☐ General Building
☐ Engineering Projects (Heavy Construction)

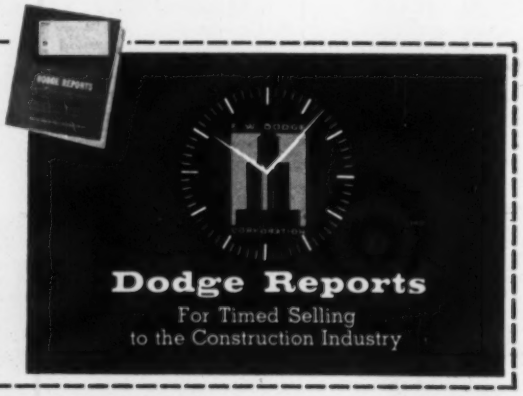
Area_____

Name_____

Company_____

Address_____

City_____ Zone_____ State_____



Highway Price Trends in Kansas

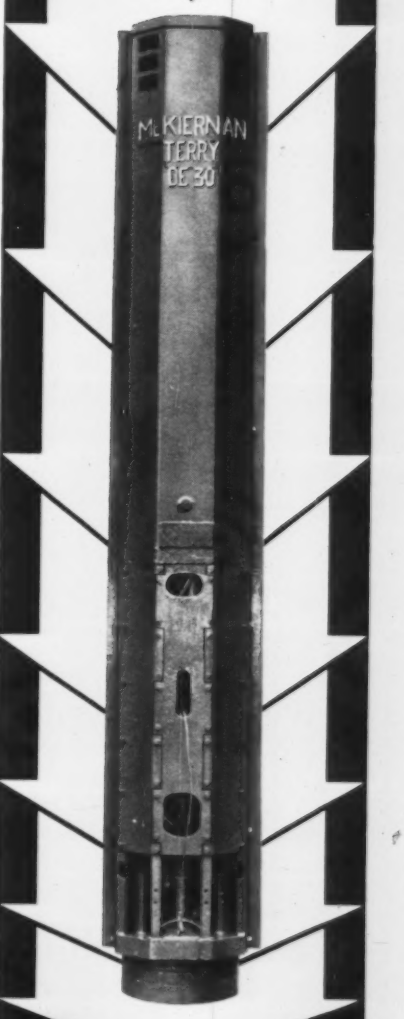
Selected unit prices on contracts let, years 1954-57
(For Kansas Highway Cost Indexes, see ENR 6-19-58, p 64)

Item	Unit	Average Unit Prices 1954	1955	1956	1957
Cement	bbl	$3.86	$5.00		$5.75
Checks, wash	lf	2.51	2.84	$2.88	2.96
Conc, cl A					
bridge slab & beam	cy	50.48	51.10	50.26	55.10
RCB	cy	34.29	39.27	38.19	38.29
culvert & misc	cy	38.19	42.83	42.59	45.70
cl AAA bridge, hollow slab	cy		61.74	58.75	62.77
Culverts, reset pipe	lf	2.07	2.13	2.66	2.27
Curb, protection	lf	0.87	1.65	2.08	2.08
edge 1½"	lf	0.57	0.52	0.55	0.43
edge 4"	lf	0.59	0.68	0.76	0.59
edge 6"	lf	0.54	0.57	0.62	0.58
edge 8½"	lf	0.90	0.85	0.86	0.71
Curb & gutters, gutter	lf	2.13	2.48	2.73	2.36
combined type I	lf	2.28	2.36	2.35	2.30
II	lf	2.15	2.39	2.38	2.14
Devices, bearing	lb	0.39	0.52	0.53	0.57
Ditch lining, grtd stone	sy	3.22	5.15	4.26	4.55
concrete	sy	4.89	5.09	4.63	6.03
Drains, pipe under					
drains 6"	lf	3.86	4.25	4.19	5.18
6" outlet	lf	3.78	4.13	4.21	4.98
slope, concrete	lf	3.50	3.94	3.78	4.06
Embankment, compact					
earthwork, type A	cy	0.044	0.043	0.048	0.050
B	cy	0.027	0.032	0.029	0.028
AA	cy	0.045	0.051	0.046	0.043
C	cy	0.048			0.036
Exc, bridge, cl I	cy	5.63	5.25	4.88	6.11
II	cy	19.03	17.51	16.91	20.00
III RCB's	cy		2.76	1.77	1.94
III other	cy		6.21	6.18	7.58
III misc	cy	3.77	4.25	3.64	3.21
sewer, rock	cy	11.07	10.65	9.64	12.81
common	cy	3.05	3.02	2.97	2.96
roadway, rock	cy	0.700	0.701	0.568	0.622
common	cy	0.201	0.245	0.231	0.234
unclassified	cy	0.228	0.257	0.400	0.310
common, sec	cy	0.204	0.189	0.224	0.230
rock, sec	cy	0.680	1.300	1.180	
linear grading	sta	36.38	55.56		
compact	sta	40.07	50.16	46.03	51.58
Fence, remove stone	lf	0.31	0.23	0.44	0.41
steel plate guard	lf	3.27	3.21	3.28	3.13
cable guard, spec	lf	4.25	3.20	3.00	1.84
rem & reconst guard	lf	1.72	1.52	1.89	1.51
rem steel plate guard	lf	0.50	0.44	0.56	1.31
Hedge, grubbing	lf	0.14	0.159	0.176	0.213
Inlets, flume, conc	ea	174.92	166.28	152.84	169.96
Iron, cast	lb	0.271	0.274	0.310	0.329
Manholes, adjust	ea	55.91	53.10	140.91	53.93
Markers, safety type					
traffic, pavement	sta	47.75	32.05	46.92	20.38
Manipulation, bit seal					
CM	sta	4.57	4.77	4.17	4.00
SCM	sta		5.43	4.64	4.26
SAST	sta	6.18	6.28	5.82	5.90
DAST	sta	7.22	8.58	8.05	9.58
bit surf course, dense gr	t	0.97	0.90	0.91	0.71
A-B base course	t	0.28	0.36	0.32	0.32
subgr modification	sta	14.76	19.44	16.90	15.85
aggr-asph base crse	t	0.80	0.87	0.80	0.68
soil-cmt base crse	sta	103.09	110.00		50.00
Oil, cutback asph RC	gal	0.125	0.132	0.135	0.137
MC	gal	0.119	0.124	0.128	0.127
asphalt cement AC	gal	0.112	0.110	0.119	0.112
Pave, conc, unif 6"	sy	5.26	4.71	5.59	5.40
7"	sy	4.25	4.50	4.80	5.04
8"	sy	5.14		6.52	5.31
9"	sy	4.43	4.57	4.66	4.54
10"	sy			5.54	5.64
binder course patch	t	22.88	16.57	22.69	22.52
widen	sta	23.96	17.23	27.92	20.86
conc base course 7"	sy	4.28	4.69	4.84	4.99
8"	sy	5.40	4.80		
bit fill brick r & r	sy	5.00		4.00	3.00
Piles, points	ea	4.89	4.97	5.27	5.37
steel, 10"	lf	4.37	5.08	6.58	5.47
12"	lf	5.73	6.27		6.02
test	lf	7.37	8.07		
treated	lf	3.27	3.36	3.23	3.55
untreated	lf	2.27	3.07	2.80	2.50
test	lf	6.01	8.03	7.89	8.00
treated test	lf		5.00	10.00	
concrete	lf	6.99	7.24	7.39	7.48
optional types	lf		4.85	5.27	5.37
Drilled shafts 24"	lf			8.00	8.60
30"	lf			10.00	11.06
36"	lf			10.92	10.82
Pipe, cross road, 18"	lf	3.73	3.57	3.93	4.66
24"	lf	4.84	5.27	5.40	5.78
30"	lf	6.11	6.89	6.64	7.59
36"	lf	8.65	8.72	9.77	10.39
42"	lf	10.87	11.96	12.35	14.14
48"	lf	12.64	13.60	14.68	14.83
60"	lf		25.00	21.29	26.53
Pipe, entrance, 12"	lf			2.50	2.53
15"	lf	2.98	3.45		3.50
18"	lf	3.34	3.40	3.64	4.07
24"	lf	4.66	4.79	4.96	5.19
30"	lf	6.11	6.05	6.26	6.33
36"	lf	8.74	8.93	9.44	9.14
42"	lf	10.21		13.22	
48"	lf	12.00	13.54	14.57	16.03
side road, 18"	lf	3.67	3.72	4.13	4.76
24"	lf	4.78	5.11	5.31	5.83
30"	lf	6.09	6.63	6.47	7.03
36"	lf	8.32	9.54	9.66	11.22
42"	lf	10.49	11.16	13.33	12.84
48"	lf	11.86	12.35	14.10	14.54
met arch,					
1.1 sf MWW	lf	3.26	3.83	4.41	3.98
1.5 sf MWW	lf	3.73	4.18	4.29	5.20
2.2 sf MWW	lf	4.02	4.20	5.39	4.45
2.8 sf MWW	lf	5.10	5.48	6.05	6.39
4.4 sf MWW	lf	6.28	6.62	7.20	7.94
6.1 sf MWW	lf	9.52	10.42	11.47	12.69
8.6 sf MWW	lf	11.03	12.68	13.32	13.41
11.0 sf MWW	lf	13.02	13.93	15.24	15.45
13.7 sf MWW	lf	16.70	16.86	21.32	22.22
16.8 sf MWW	lf	24.55	28.00	25.35	32.32
End sect, conc 15"	ea				35.00
18"	ea				45.00
24"	ea				56.59
30"	ea				70.76
36"	ea				127.31
42"	ea				141.36
48"	ea				154.00
metal 15"	ea				38.17
18"	ea				30.19
24"	ea				50.00
30"	ea				50.75
36"	ea				106.00
42"	ea				165.00
Culv, met arch 1.5 sf	ea				33.00
2.8 sf	ea				50.00
4.4 sf	ea				62.58
6.1 sf	ea				90.00
8.6 sf	ea				133.75
Storm sewers, 12"	lf	2.63	3.67	3.50	3.89
15"	lf	3.68	3.35	3.78	3.60
18"	lf	4.04	4.14	4.17	4.35
21"	lf	5.65		5.47	5.39
24"	lf	5.19	5.86	6.11	6.11
30"	lf	7.16	7.39	8.56	7.97
36"	lf	9.80	11.27	11.40	11.53
42"	lf			15.35	11.79
Culv, met arch 1.1 sf	lf			4.72	3.91
1.5 sf	lf			4.92	4.55
2.8 sf	lf			6.84	6.65
4.4 sf	lf			7.89	9.00
Pipe, eros, bit ctd 15"	lf	4.50	5.93	4.97	5.89
18"	lf	4.59	6.34	5.90	9.50
24"	lf	6.44	7.64	7.22	8.21
30"	lf	7.58	10.99	10.76	9.03
36"	lf	12.47	11.42	12.50	15.00
42"	lf		14.00		15.00
Guideposts, wood	ea	4.74	4.85	4.69	4.95
remove	ea	0.77	0.80	1.29	1.37
Rail, bridge handrail					
metal	lf	4.64	4.59	5.10	4.68
aluminum	lf		6.26	9.20	7.90
Riprap light stone	sy	4.00			
heavy stone	sy		6.05		
reinf conc	sy	4.84	6.05	5.74	6.23
Shoulders	sta	29.54	33.07	33.18	29.28
Sidewalk constr 4"	sy	4.15	4.53	4.43	4.19
6"	sy	5.27	5.19	5.03	5.00
Signs, refl adv warn	ea	44.28	41.54	40.00	42.68
RR crossing	ea	160.97	144.75	151.86	181.24
Steel, reinf bridge	lb	0.123	0.128	0.132	0.141
culv & misc	lb	0.127	0.133	0.138	0.143
structural	lb	0.149	0.163	0.180	0.203
erect struct	lb	0.030	0.027	0.040	
Structure, rem exist	ls	952.71	1,237	1,098	1,333
Subbase, granular 4"	sy	0.426	0.433	0.487	0.457
Surfacing, aggr BMA	t	1.97	2.06	1.79	1.33
binder course HM	t	6.32	6.22	6.16	4.85
surf course HM	t	6.56	6.26	6.20	5.59
cover material CM	cy	3.56	3.48	3.05	2.76
SCM	cy		5.19	6.14	4.04
combined matl AB	t	1.31	1.72	1.66	1.77
light type SA-1 to 7	cy	2.10	2.70	1.93	2.42
SS-1 to 17	cy	2.19	2.21	1.79	2.13
resurf & surf matl	cy	2.88	2.93	2.67	3.07
aggr subgr modif	cy	2.38	2.72	2.09	1.86
blanket underdrain	t	2.60	3.69	3.00	3.35
asphalt base AA	t	1.86	1.76	1.47	1.20
soil cmt base crse	t		1.04		1.00
Trees, large	ea	14.37	16.53	14.98	18.17
Water, for base constr	Mgal	2.16	2.65	2.28	2.18

MWW Minimum waterway r & r removed relay

DIESEL PILE HAMMERS

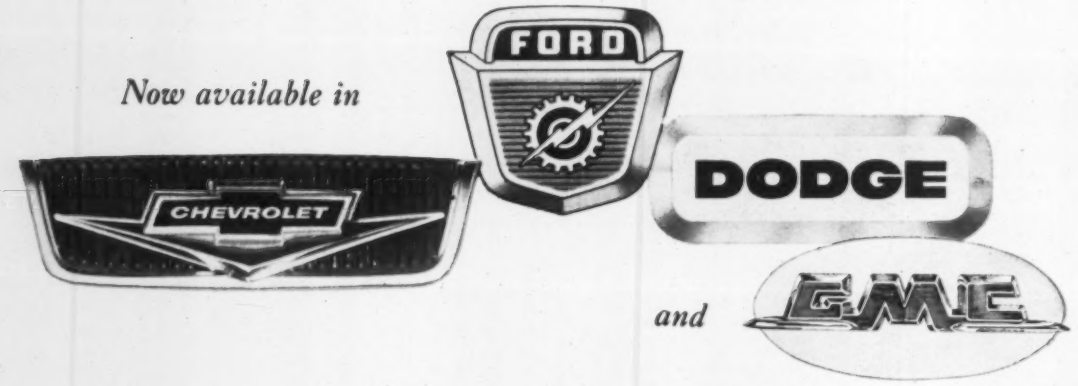
are self contained — no steam — no air — a small quantity of fuel oil for all-day operation — high driving rate — simple design — easy to maintain — write for Bulletin 67R.



McKIERNAN-TERRY CORP.
80 RICHARDS AVE., DOVER, N. J.

The Transmission with puts more pay-off

Now available in



- Increases payload 33⅓% per trip for West Coast contractor.
- Lets 3 trucks do the work of 4 for New Jersey sand-hauler.
- Cuts brake maintenance 75% for Utah ore-hauler.
- Gives Michigan car-hauler 100 extra miles per day.
- Slashes engine maintenance 50% for Rocky Mountain trucker.

Allison

the "*Automatic Brain*" in your payloads

— the Allison Fully Automatic Truck Transmission pays for itself within the first twelve months of truck operation.

LIFE'S a lot easier for your bankbook and your truck fleet—when you operate a Chevrolet, Ford, Dodge or GMC that's equipped with the Allison Automatic Transmission.

For working with you every mile of the way is the "Automatic Brain"—the first automatic transmission designed specifically to make full use of today's modern high-torque engines.

The "Automatic Brain" provides so many practical advantages, it can be truly said to offer America a *new kind of truck.*

For example, it can boost engine life at least 33⅓% by cushioning the engine and drive line from shock damage—saves brake linings because the hydraulic retarder lets you slow down without touching the service brakes.

It reduces trip time an average of 18% assures fuel economy with its direct-drive lockup in every forward gear.

It multiplies engine torque 14.8:1 (maximum availability) with an infinite number of ratios to the exact torque required—delivers maximum power from a standing start.

And then there's PTO—power take-off. Here, for the first time, the smoothness of torque-converter drive is available on power-driven auxiliary equipment, whether hydraulic or mechanical. PTO can be located on either or both sides of the truck.

With converter-driven PTO, the operator can inch the load smoothly and accurately with one control—the accelerator. Thus side-mounted PTO provides an extra dividend that makes the job easier, the profits better.

Four leading manufacturers—Chevrolet, Ford, Dodge and GMC—have incorporated the "Automatic Brain" into their newest medium and heavy-duty trucks, school buses and other commercial vehicles. It is also available in an integrated engine-transmission power plant with Chrysler and Ford industrial engines.

Get the whole story on this great time and money saver from your dealer in Chevrolet, Ford, Dodge or GMC or write:

ALLISON DIVISION OF GENERAL MOTORS, Indianapolis 6, Indiana

FULLY AUTOMATIC TRUCK *Transmissions*

Materials and Labor Prices

Monthly Market Quotations by ENR Field Reporters

See following ENR issues for OTHER PRICES:

- Iron and Steel Products: Last, Aug. 14; Next, Sep. 11
- Wood Products, Glass, Explosives, Chemicals: Last, Aug. 21; Next, Sep. 19
- Clay Products, Lime, Plaster, Paint, Roofing: Last, Aug. 28; Next, Sep. 15
- Wage Rates, Building Board, Lath, Insulation: Last, Aug. 28; Next, Oct. 2

CEMENT, AGGREGATE, READY-MIXED CONCRETE—F. O. B. CITY

	PORTLAND CEMENT* Per bbl. C/L lots cash, dis. not deducted			SAND AND GRAVEL Per ton, carload lots			CRUSHED STONE Per ton, carload lots		CRUSHED SLAG Per ton, carload lots, f.o.b. plant		CONCRETE BLOCK 8x8x16-in.," truckload del." per block		CONCRETE Ready Mixed 1:2:4 del.
	Paper	Bulk	Mortar	Gravel, 1½ In.	Gravel, ¾ In.	Sand	1½ In.	¾ In.	1½ In.	¾ In.	Sand grav.	Lt. wgt. agg.	50 cy & over
Atlanta	$4.35am	$3.93am	$3.60m	$3.10	$3.10	$2.50‡	$2.18	$2.33	$1.65	$1.75	$0.175	$ .21	$14.50r
Baltimore	3.90a	3.80a	3.32a	2.80‡a	2.80‡a	2.25‡a	2.85‡a	2.90‡a	2.05‡a	2.00‡a	18a	18a	13.10-13.60
Birmingham	4.23	3.30f		2.53n	2.53n	2.13n	2.75	2.75	1.55	1.65	18	18	12.55
Boston	5.80ei	4.59a	4.67e	3.00am	3.00am	3.00am	1.75am	1.85am			23	275a	15.00h
Chicago	4.13ag	3.87a	3.90-3.95	3.78‡b	3.78‡b	4.13‡b	3.95‡b	3.95‡b	2.25‡	2.25‡	25	25b	13.50
Cincinnati	4.68c	4.16c	4.18c	2.29‡c	2.34‡c	2.34‡c	2.64‡c	2.64‡c	1.89	1.89	19	24a	13.25
Cleveland	N.A. in C.L.		3.80c	2.25ef	2.10f	1.75	4.50‡a	4.50‡a	3.45‡a	3.45‡a		22	14.65
Dallas	3.75a	3.25a	3.63	2.65	2.70	1.90	2.43	2.63				27	12.20
Denver	4.79a	4.29a	4.79	1.90	2.05	1.20‡b					22	245a	10.70
Detroit	4.25a	3.75ag	3.72ag	4.50‡b	4.50‡b	4.25	3.75‡	3.75‡	3.50‡	3.50‡	24	27a	14.40
Kansas City	4.23a	3.83a	4.10a			1.70‡a	2.00‡a	2.00‡a			22a	26c	13.50
Los Angeles	5.12ch	4.68ch	5.60	2.56‡a	2.76‡a	2.41‡a	2.41‡a	2.46‡a			17fm	285m	12.96h
Minneapolis	4.42a	4.01a	4.08a	2.70‡ag	2.70‡ag	1.60‡ag	3.95‡g	3.95‡ag			19		14.30f
Montreal	3.36d	3.11d	3.72	1.90‡a	2.15‡a	2.40‡a	1.90‡i	2.15‡i	2.00	2.00	20	28a	10.80ek
New Orleans	4.06a	3.65a	3.85	2.45	2.45	2.69			1.45	1.05	275		14.00
New York	4.65a	4.24a	3.69	3.20bk	3.20bk	2.30bk	3.100bl	3.106l			235n	270b	17.40an
Philadelphia	4.57‡a	4.16‡a	3.61‡	2.85‡a	2.85‡a	2.35‡a	2.70‡	2.80‡	2.00	2.35	25-32		14.15do
Pittsburgh	5.65bjk	4.62bj	5.00bjl	2.68aq	2.68aq	3.08aq	2.00e	2.00e	2.20	2.20	26	28	15.80
St. Louis	4.16-4.48c	3.76-4.08c	3.86-4.18	3.25am	3.10am	2.40-3.10am	1.65j	1.75j			24	30c	12.65-13.15
San Francisco	4.09c	3.69c	4.53c	2.02	2.02	2.12	2.17	2.17			24	28ef	13.00c
Seattle	4.22a	3.70a	4.40a	4.25‡bm	4.25‡bm	4.25‡bm	4.50‡bm	4.50‡bm			26	37c	13.90j
Toronto	4.00a	3.84a	4.00a	2.40‡	2.40‡	2.05‡	2.20	2.20	2.20	2.20	26	275c	15.25

‡ Delivered. * Prices incl. dealers discount except as noted.

CEMENT: •a Less 10¢ disc. 15 days. •b Less 2% disc. 15 days. •c Less 10¢ disc. 10 days. •d Truckload lots, deliv. 10¢ disc. 20 days. •e Truckload lots •f Fob mill, add 14.58 to $21.31 per car switching charges •g fob mill + freight •h LCL. •i Less 2% disc. 10 days •j Truck lots, fob yard •k 100 bag lots •l over 150 sacks •m Incl. 4¢ Ga. frt. Increase

SAND GRAVEL, STONE & SLAG: •a Truck lots. •b Per cu. yd. •c 5 tons or more. •e ¼". •f Pea gravel. •g Less 5% for cash. •h Less than 5 tons. •i Plus 5% mun. & prov. tax •j F.o.b. quarry. •k Barge lots asd. •l F.o.b. scow Hudson river. •m Less 2% for cash. •n F.o.b. cars. •q fob yard

CONCRETE BLOCK: •a Cinder. •b Waylite. •c Haydite. •d Celocrete •e 5¼ x 8 x 12 in. •f 8 x 4 x 16. •g F.o.b. truck at job. •l F.o.b. plant San Rafael. •m F.o.b. yard. •n 8 x 8 x 18.

READY MIXED CONCRETE: •a 5 cu. yds. or over del. Man. •b 25 cu. yds or more. •c 10-100 cy. brackets. •d 1-3 mi. zone. •e 2,000 lb comp. •f 2,500 lb. comp. •g Less 25¢ disc. 15 days. •h Less 50¢ for cash. •i 5% off for cash. •j 2% off for cash. •k Federal tax included. Add 5% mun. & prov. •l 1:2½:3½. •m F.o.b. yard. •n Plus escalator clause. •o Add 15¢ for ea. add'l 1-mi zone.

CASH DISCOUNTS CEMENT to Contractors: Truck delivery, 2% for cash on 10th of month; on carload deliveries, no trucking, same as dealer cash discount 10¢ per bbl. for payment within 15 days of date of invoice. Subject discount 10¢ per bbl. 20 days in Montreal.

CURRENT MAXIMUM PRICES AT CEMENT MILLS

Charge for bags not included. For paper bags add 40¢ per bbl., not refundable

	Bulk		Bulk		Bulk		Bulk		Bulk
Richard City, Tenn	$3.45†	Buffington, Ind	$3.40†	Steelton, Minn	$3.45†	Muskegon, Mich	$3.45†	Toledo, O	$3.45†
Clinchfield, Ga	3.45†	Independence, Kan	3.25†	Leeds, Ala	3.30†	Saginaw, Mich	3.45†	Milwaukee, Wis	3.50†
Kingsport, Tenn	3.45†	Hannibal, Mo	3.35†	Duluth, Minn	3.45†	Wyandotte, Mich	3.45†	Green Bay, Wis	3.50†
West Des Moines, Iowa	3.50†	Northampton, Pa	3.35†	Hudson, N. Y.	3.35†	Buffalo, N. Y	3.55†	Ironton, O	3.45†
Nazareth, Pa	3.35†	Universal, Pa	3.60†	Alpena, Mich	3.35†	Oswego, N. Y	3.60†	Montreal City	2.56†
Bath, Pa	3.35†	Waco, Tex. (+ 10¢ tax)	3.35†	Detroit, Mich	3.45†	Cleveland, O	3.50†	W. Winfield, Pa	3.60†
Lesley, Pa	3.35†	Giant, S. C	3.45†	Howes Cave, N. Y	3.35†	Alsen, N. Y.	3.35†	Security, Md	3.35†

† *Prices to hold for first quarter of 1958.*

PAVING BRICK, BLOCK, ASPHALT, ROAD OILS—F. O. B. CITY

	PAVING BRICK AND BLOCK			PAVING ASPHALT Per ton, less than 80 penetration		ASPHALT BINDERS FLUXES Per gal., 80-300 penetration		CUTBACK ASPHALT MC per ton		ROAD OIL Per gal.	ASPHALT EMULSION RSI Per gal.	
	Granite Per M lots of 50,000 4x4x8 in.	Brick per M 3x4x8½ in. carload lots	Wood per sq. yd. 3½ in. 16-lb. treat	Tank car	Drums	Tank car	Drums	Tank car	Drums	Tank car	Tank car	Drums
Atlanta				$30.50	$45.00	$0.15	$0.26	$0.125Pw	$0.28Pw	$0.14	$0.125	$0.30
Baltimore	150.00‡			23.00i		.095i	0.185i	.10weE	.19weE	10i	.105i	0.195i
Birmingham		66.00i										
Boston				22.00ap	46.00ap	.22a	.46a	.105aFw	.24aFw	.105ao	.174aGo	.235aGo
Chicago	150.00‡	90.00‡b	3.95/4.00‡j	21.20b	31.20b	20.40bv	30.40bv	.975bwH	.1775bwH	080b		
Cincinnati												
Cleveland		89.50d	6.30g	25.00A		25.00Av		.1115AwF			.1180AG	.21AG
Dallas	e	40.78	e	26.30	45.30	.1116	.1944	29.85	51.40	.1080	.1116	.1944
Denver		58.00										
Detroit		116.00		33.05		32.45v		13.50l		.1133		.28
Kansas City	e	e	e	18.00cl		18.00v		.0825cwJ		.06c	0.125c	
Los Angeles	e		e	22.50dmz		22.50dvz		24.00dz K		23.00dv	.1038j	.2038J
Minneapolis			3.73h	26.00		29.50v		0.115w		0.105	.125	
Montreal	e	e	e	32.50m	59.80m	.176n	.226n	18.70nuE	23.70nuE	.154n	.242ns	.27ns
New Orleans				20.00e	.....o	20.00ev	.....e	.095ew	.....o	.085BL	.095BL	.1905B
New York			3.50f	20.99m	42.94m	20.99vt	40.94vt	9.61uF	19.01uF		9.68u	19.11u
Philadelphia	175/185	110/120	4.06	24.00		24.00		.11uF		.105		
Pittsburgh	60.00k	99.12fn	6.35	31.40is		31.40iv		.1411i		14‡	.1411i	
St. Louis				19.74f		.1825		.0893fwM		0.165	.825	
San Francisco		70.00c		24.50g	41.50g	24.50gkv	41.50gkv	24.50gN	43.00gN	25.25vg	25.50gv	.2063y
Seattle				26.00z	41.00h	26.50z		27.50K		25.25hv	24.50hv	46.10hrv
Toronto		135.00	4.50f	40.10	59.38	0.2005	0.2445	0.214w	0.258w	0.198	0.216	.271

‡ Delivered.

PAVING BRICK & BLOCK: •b 3 x 3¾ x 8. •c 2¼ x 8¼ x 4. •d LCL, truck deliveries. •e Not used. •f 2" interior 6# treat. •g 3". •h 2" tr, 8#. •j 3 x 3 x 8½. •j 2½", 6 lb. tr. •k Used. •l Redshale; •m Pine; oak $6.57. •n Truck del.

ASPHALTS: •a Price at plant, Everett, Mass. •b F.o.b. refinery, Lockport, Ill. •c F.o.b. Sugar Creek, Mo. •d F.o.b. refinery, El Segunda. •e F.o.b. Baton Rouge. •f F.o.b. Hartford, Ill. •g F.o.b. Richmond, Calif. •h F.o.b. Martinez. •i F.o.b. refinery, Baltimore. •j F.o.b. refinery, Inglewood, Calif. •k 50-110 penetr. •l Less than 100 penetr. •m 40/300 penetr. •n Fed. tax included; add 5% for mun. & prov. •o Drums not avail. Shipped in steel bbl. •p 60/70 penetr. •r In customer's drums. •s Shipped in drums, per drum. •t 150/300 penetr. •u Per 100 gal. •v Per ton. •w Per gal. •x Also tank trucks. •y F.o.b. Oakland. •z F.o.b. Edmonds. •A F.o.b. refinery, Cleveland. •B F.o.b. Destrehan, La. •E RC. •F Also RC. •G Also MS, SS. •H RC 0-5 incl. •I MC 4. •J MC, RC $0.095 •K MC 3,4,& 5. •L MS. •M MC 1-5, RC 1-5, $0.106. •N MC 3. •O Truckload. •P F.o.b. refinery Savannah: $0.09/gal., tank cars; $0.20/gal., drums. •Q F.o.b. Eldorado, Ark.

Bids Asked—Low Bidders—Contracts Awarded—

Compiled by Business News Department—Engineering News-Record, 330 W. 42nd St., New York 36, N. Y., ELSIE EAVES, Manager
J. A. MAHONEY, M. WETZEL, M. E. SCIORRA, D. TARTAGLIA, Reports
J. H. WEBBER, M. R. ROESSLER, E. R. HUBER, Statistics.

NEW ENGLAND

HEAVY CONSTRUCTION—BA

Mass., Dedham—SKATING RINK, etc.—BA 9/16—Dedham Arena Corp., 33 Commonwealth Ave., Dedham, arena and skating rink, Orchard Rd. $300,000-$350,000. Plans deposit $50. Korslund, LeNormand & Quann, Inc., 506 Washington St., Norwood, Mass., archt. CD 7/3.

† **Mass., Chicopee Falls**—UNDERGROUND HIGH TEMPERATURE—BA On Or About 9/17—U. S. Eng., 310 State St., Springfield, Mass. extension underground high temperature hot water sys., Westover Air Force Base. ENG.-19-016-59-17. $25,000-$50,000. Plans deposit $10. Extended date." CD 7/31.

† **Mass., Falmouth**—TRANSMITTER FACILITY—BA On or About 9/23—U. S. Eng., 187 Westminster St., Providence, R. I., ground to air transmitter facility, Otis Air Force Base. ENG 19-016-59-23. $100,000-$150,000. CD 9/17.

Conn., Groton—BA 9/27—Groton Sewer Authority, sanitary sewers, force main, utilities, constr. 1958-2. Approx. $200,000. Metcalf & Eddy, Statler Bldg., Boston, Mass., engrs. CD 7/8.

▲† **Vermont**—BA 10/8—U. S. Eng., 150 Causeway St., Boston, Mass., Townshend Dam and reservoir, West River, CIVENG-19-016-59-7. $6,000,000. CD 8/15.

BUILDINGS—BA

Mass., Athol—HOSPITAL—BA 9/16—Athol Memorial Hospital, Bd. Trustees, Main St., hospital addn., Main St. $350,000. G. Adolph Johnson Inc., 82 Foster St., Worcester, Mass., archts. CD 10/31.

Mass., Weston—SCHOOL—BA 9/17—Town, School Bldg. Comm., Town Hall, elementary school, Wellesley St. $754,000. Plans deposit $100. Hugh Stubbins & Assoc., 806 Mass. Ave., Cambridge, Mass., archts. CD 6/5.

Mass., Boston—DORMITORY, etc.—BA 9/18—New England Conservatory of Music, 290 Huntington Ave., Boston, (selected list bidders), dormitory and library. Huntington Ave. $550,000. Kilham, Hopkins, Greeley & Brodie, 9 Arlington St., Boston, Mass., archts. CD 8/29.

▲ **Mass., Fall River**—DORMITORY, etc.—BA 9/19—St. Annes Hospital, 795 Middle St., Fall River, dormitory and school of nursing. $1,600,000. Plans deposit $50. Israel T. Almy, 56 North Main St., Fall River, Mass., archt. CD 6/10.

HEAVY CONSTRUCTION—LB & CA

▲† **Beacon Constr. Co.**, 102 Hano St., Allston, Mass., CA sch. #4 CA $645,000 #8 CA $630,000 pavements and minor structures, additional, Hartford and Bridgeport, Defense Area, ENG-19-016-59-10. CONNECTICUT, U. S. Eng., 150 Causeway St., Boston, Mass., engr. CD 8/15.

Elm Constr. Co., 637 New Park Ave., West Hartford, Conn., LB $84,007, sanitary sewer, Linwood Ave. area, Newington HARTFORD, CONN., Metropolitan Dist., 115 Broad St., Hartford, Conn. CD 10/25/57.

▲ **Campanella and Cerdi**, 780 Jefferson Blvd. Hills Grove, Rhode Island, and **DeFonce Constr. Co., Inc.**, 110 Colonial Ave., Bridgeport, Conn., LB $1,427,630 (9 bidders) constr. 58-4 gulf pond sewage treatment plant and lift station, MILFORD, CONN., Town of Milford, Milford, Conn. CD 8/5.

† **Breino Constr. Corp.**, 18 Tremont St., Boston, Mass. LB $234,900, base chapel, Pease Air Force Base, Eng. 19-016-59-11 PORTSMOUTH, N. H. U. S. Eng., 150 Causeway St., Boston, Mass. Bids Aug. 19. CD 7/17.

MASSACHUSETTS—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston bids opened 8/19.

Lloyd & McConnell, 450 Union St., Franklin, Mass., LB $77,017 Est. $77,409, Chapter 90 hy. and bridge work Salisbury St., Holden. CD 8/14.

New England Dredge & Dock Co., 60 So. Water St., New Haven, Conn., LB $72,390, dredging basin and channel, Buttermilk Bay, Wareham, MASSACHUSETTS. Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, Mass. Bids Aug. 19. CD 8/8.

National Gunite Co., 101 W. Dedham St., Boston, Mass., LB $134,800 Est. $125,000, prestressed concrete water reservoir, HOLDEN, MASS. Town, Town mgr., 1174 Main St., Holden, Mass. Bids Aug. 18. CD 8/6.

New England Dredge & Dock Co., 60 So. Water St., New Haven, Conn., LB $221,660 (2 bidders), Proj. BI-FC-18B, placement sand fill, Fairfield Beach, FAIRFIELD, CONN. Bids Aug. 20. CD 8/12.

NEW HAMPSHIRE—State Dpt. P. Wks. & Hys., Concord. Bids opened Aug. 21.

R. G. Watkins & Sons, Inc., Mill Yard, Amesbury, Mass., LB $622,825, hot b. conc. 1.65 mi. roadway and 244 ft. steel beam bridge, Boscowen, Merrimack Co. Bids Aug. 21.

PROJECTS COVERED

By Size

Construction projects here reported cover the United States and Canada, are of these minimum sizes or larger: water supply, earthwork, waterways $44,000; other public works $73,000; industrial buildings $93,000; other buildings $344,000. Also Foreign projects of $100,000 and more in size of Interest to American contractors.

By Regions & Classes of Construction
(In order of Listing)

BIDS ASKED
LOW BIDDERS
CONTRACTS AWARDED
New England — Middle West
Middle Atlantic — West of Mississippi
South — Far West
PROPOSED WORK
Water Supply — Public Buildings
Sewers, Waste Disposal — Mass Housing
Bridges — Commercial Buildings
Streets & Roads — Industrial Buildings
Earthwork, Waterways — Unclassified

In These Stages

PROPOSED WORK: Before and including appointment of engineers or architects.

BIDS ASKED: BA (new announcements only). For full calendar, see also preceding issues.

SOON LETS CONTRACT: SLC

LOW BIDDERS: LB On jobs below $500,000 in value all low bidder news will be the final reports published on the projects involved except where award is not made to the low bidder. In this case, a supplementary contract award report will be published.

CONTRACTS AWARDED: CA Except awards to low bidders previously reported in low bidder stage.

CD dates shown are of Construction Daily Issue in which last previous report was published.

OWNERS, ENGINEERS, ARCHITECTS, CONTRACTORS are invited to report their new jobs for listing in these reports when they meet or exceed the size minimums shown above. Address these news releases to J. A. Mahoney, REPORTS, ENGINEERING NEWS-RECORD, 330 W. 42 St., New York 36, N. Y.

Symbols and Abbreviations Include:

† Federal Government
▲ Project of $1,000,000 or over
ENR Engineering News-Record
CD Construction Daily
For additional reports see Construction Daily.

BUILDINGS—LB & CA

▲ **George B. H. Macomber Co.**, 25 Fordham Rd., Allston, Mass., CA $1,621,500, est. $1,500,000, 2 DORMITORIES, Mass. 19-CD-32 (D), MEDFORD, MASS Tufts University Bd. Trustees, Medford, Mass. Bids Aug. 12. CD 8/14, under LB.

▲ **C & C Constr. Co.**, 239 Main St., East Haven, Conn., Owner builds, $1,290,000, 129 HOUSES, "Pine Grove", Shaw Drive, NORTH HAVEN, CONN. CD 6/12.

Massacoe Builders, Inc., Hopmeadow St., Simsbury, Conn., CA $100,000 FACTORY alteration, addn., Laboratory, office, SIMSBURY, CONN., Ensign-Bidkford Co., Hopmeadow St., Simsbury, Conn. CD 3/7.

J. Michael Cantore, 1172 Bedford St., Stamford, Conn., Owner Builds, $472,000 3 story, concrete bsmnt., brick COMMERCIAL bldg., STAMFORD, CONN. CD 8/4.

Winson Constr. Co. Inc., 27 Boutelle Ave., Waterville, Me., LB $186,000 Est. $200,000, general storage WAREHOUSE, State Hospital, AUGUSTA, ME. State Dpt. Institutional Service, State House, Augusta, Me. Bids Aug. 19. CD 7/30.

Merigan Constr. Co. Inc., Rte. 152, Foxboro, Mass., CA Est. $350,000, RESIDENTIAL DEVELOPMENT "Ridgeway Estates", Rte. 152, FOXBORO-NORTH ATTLEBORO, MASS. Owner, c/o Contractor.

Owner, c/o Costanza & Bertolino, agents, 84 Main St., North Reading, Mass., Separate Contracts, $350,000, RESIDENTIAL DEVELOPMENT "Lakeview Park", 20 houses off King St., GEORGETOWN, MASS.

Owner, c/o Cook Realty Co., 5 West Central St., Natick, Mass., Separate Contracts, $360,000, RESIDENTIAL DEVELOPMENT "Pleasantview" 24 houses, Pleasant St., MILLIS, MASS.

Robert Stone Co., 44 W. Emerson St., Melrose, Mass., Separate Contracts, $350,000, RESIDENTIAL DEVELOPMENT "Boswell Park" 14 houses, Charles St., READING, MASS.

Joseph J. Cacciatore, Saville Rd., Saugus Center, Mass., Separate Contracts, $350,000, RESIDENTIAL DEVELOPMENT, 16 ranches, Saville Rd., SAUGUS, MASS.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

D. C., Wash—BA 9/18—D. C. Dpt. Sanitary Eng., 499 Pa. Ave. N.W., sewage treatment plant addns., sludge handling facilities; Unit 24, construction and equipping of the diluting water pumping station, Heat Exchanger Bldg., thickening tanks, new elutriation piping and equipment in the existing elutriation tanks, sludge digestion tanks and operation galleries, and addns. and appurtenant work as specified and shown on the plans. Plans deposit $50; adv. ENR 9/4. CD 1/14.

N. Y., New York—ESCALATOR—BA 9/26—New York City Transit Auth., 370 Jay St., Brooklyn, Zone 1, general constr. passenger escalators and electrical work to provide increased escalator service at 5th Ave. Station, IND Div., Manhattan Boro. Contr. No. C-125. CD 8/31/45.

BUILDINGS—BA

† **N. Y., Plattsburgh**—SCHOOL—BA 9/16—At Office Regional dir., Housing and Home Finance Agency, O. A., Rm. 906, 346 Broadway, New York Zone 13, general constr., heating and ventilating, plumbing, electrical work and fixtures and site work elementary school at Plattsburgh Air Force Base. Plans deposit $7.50.

▲ **Pa., Warfordsburg**—BA 9/16—SCHOOL—Southern Fulton Co. School Auth., Warfordsburg, high school. $1,126,000. Plans deposit $50. E. G. Good, Jr., 904 N. 2 St., Harrisburg, archt. CD 11/14/57.

Pa., Millersville—DORMITORY, etc.—BA 9/17—General State Auth., 18th and Herr Sts., Harrisburg men's dormitory and utility expan. Millersburg State Teachers' College. $680,000. Plans deposit $10. Henry K. Shaub, 20 N. Queen St., Lancaster, archt. A. F. Jones Ch. Eng. c/o owner eng. CD 1/2/57.

▲ **N. Y., Edgemere**—HOUSING—BA 9/23—New York City Housing Auth., 299 Broadway, New York, Zone 7, general constr., heating and ventilating, electric work and plumbing Edgemere Houses, Proj. No. NYS-79, area bounded by Almeda Ave., Beach 51st St., Beach Channel Dr. and Beach 58th St., Queens Boro. Plans deposit $75. CD 5/10.

▲ **N. J., Dover**—SPECIAL WEAPONS BLDG.—BA 9/30—U. S. Eng., 111 E. 16 St., New York 3, N. Y., special weapons bldg., Picatinny Arsenal, Serial No. ENG-31-075-59-30. $2,000,000-$3,000,000. Plans deposit $100. CD 4/29/57.

HEAVY CONSTRUCTION—LB & CA

▲ **Union Switch & Signal Co.**, 350 5th Ave., New York, Zone 1, N. Y., CA $5,018,606, furnishing, installing block signalling and interlocking equipment for rehabilitation of Lexington Ave. Line, IRT Div. Astor Pl. to North 42nd St. Contr. S-90, Manhattan Boro, NEW YORK, N. Y. New York City Transit Auth., 370 Jay St., Brooklyn 1, N. Y. Bids July 11. CD 7/18, under LB.

C. W. Lauman & Co., Inc., Rte. 107, Bethpage, N. Y., LB $666,289, (8 bidders), Contr. 902, conversion of North Yonkers Screening Plant, Yonkers Joint Sewer Proj., YONKERS, N. Y. Dpt. P. Wks., Westchester Co., County Office Bldg., White Plains, N. Y. Bids Aug. 20. CD 7/21.

▲ **Utility Service Corp.**, 715 Elizabeth Ave., Elizabeth, N. J., CA $1,056,770, installation of UNDERGROUND CABLE SYS. from Athenia switching station thru Clifton, Passaic, Rutherford, Carlstadt to Moonachie, NEW JERSEY. Public Service Electric & Gas Co., 80 Park Place, Newark, N. J. CD 2/7/57.

▲ **Joseph Miele Constr. Co., C. Salvatore & Sons** and **LaFera Contracting Co.**, 90 Millburn Ave., Maplewood, N. J. CA $1,742,715, (6 bidders), Kill Van Kull outfall sewer line thru Carteret and Woodbridge to Kill Van Kull, Contr. No. 5; CA $587,310, (6 bidders), constr. of upper 3-mi. section of Kill Van Kull outfall sewer line, Contr. No. 4, RAHWAY, N. J., Rahway Valley Sewerage Auth., E. Hazelwood Ave., Rahway, N. J. Bids Aug. 14. CD 6/26.

PENNSYLVANIA—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg.

A. C. Hack & Sons, Inc., Box 447, Bloomsburg, Pa., CA $779,957, 7 piers for proposed bridge over Monongahela River 1,524 ft. T.R. US 40, W. Bronsville and Bronsville Boros, Washington and Fayette Counties. Bids July 11. CD 7/16, under LB.

▲ **PENNSYLVANIA**—Pa. Hys. Dpt., 506 North Office Bldg., Harrisburg,

Pa.—**Latrobe Road Constr., Inc.**, Box 150, Latrobe, Pa., CA $3,481,873, Est. $2,500,000, 32,915 ft. divided hy. rein.-con. 24 ft. wide each side divisor, 7 bridges Windour By-Pass T.R. 56 Winder, Paint and Scalp Level Boros; Richland and Paint Twps., Somerset and Cambria Counties;

4 in 1

3 in 1

2 in 1

GASOLINE ENGINE DRIVEN WELDER/POWER PLANTS

FIREBALL AMPERAGE RANGES	
METALLIC	INERT GAS
35-100 AC	35-75 AC
65-160 AC	65-160 AC
110-400 AC	150-375 AC
35-80 DC	35-100 DC
75-175 DC	85-225 DC
125-350 DC	170-375 DC

DAH-350 FIREBALL four-in-one model is the only complete unit made to incorporate an ac-dc welder for (1) metallic arc, or (2) tungsten inert gas welding, plus (3) ac power plant, and (4) 1 KW dc power while welding. Twelve separate amperage ranges as shown above. Additional standard equipment features include a polarity switch, either continuous or "start only" high frequency and an automatic inert gas control panel with solenoid valve and postflow timer. Rated output at 100% duty cycle: 250 amps dc tungsten arc; 300 amps ac tungsten arc. Generator: 10 KW of 115/230v, single phase, 60 cycle ac.

DA-300 BIG RIG. Combination ac-dc welder, plus an ac power plant, plus 1 KW of dc power while welding, give this model three-in-one versatility. Generator rated at 10 KW of 115/230v, single phase, 60 cycle ac. Welding ranges in amperes are: (dc) 75-175 or 125-350; (ac) 65-160 or 110-400. Rated output at 100% duty cycle: 250 amps dc at 40 volts and 300 amps ac at 40 volts.

D-250 ROUSTABOUT provides a two-in-one arrangement whereby either of two dc welding current ranges — 75-175 amps or 125-350 amps — and 1 KW of 115v dc auxiliary power are available simultaneously. Rated output is 250 amps at 40 volts, 100% duty cycle. Generator produces 10 KW of 115/230v, single phase, 60 cycle ac.

All models offered with skids or trailers. Complete specifications and prices sent promptly.

miller ELECTRIC MANUFACTURING COMPANY, INC.

Distributed in Canada by Canadian Liquid Air Co., Ltd., Montreal • APPLETON, WISCONSIN

miller WELDERS

GUNITE

Since 1915

CONCRETE SAND AND CEMENT "Placed by Air"

GUNITE

BLO-CRETE WET-CRETE

LINING, ENCASING, FIREPROOFING, REPAIRING

Send for our new bulletin No. 20 of actual photographs, information and detailed specifications.

GUNITE CONCRETE & CONST. CO.

1301 WOODSWETHER RD., KANSAS CITY 5, MO.
2016 W. Walnut St., Chicago 12, Ill.
1004 Market St., St. Louis 1, Mo.
3206 Houston Ave., Houston 9, Texas
1136 W. Orangethorpe, Fullerton, Calif.
Milwaukee—Twin Cities—Denver—New Orleans

FOUNDATION CONSTRUCTION BY

McKINNEY

DRILLING CO.

BOX 190—LOGAN 4-8373
NACOGDOCHES, TEXAS

CAISSONS

DRILLED & UNDERREAMED

PIERS

WIRE OR PHONE FOR A QUOTATION ON YOUR NEXT FOUNDATION JOB

ANYWHERE IN THE WORLD

OFFICES IN
ATLANTA, GA. • PITTSBURGH, PA.
WASHINGTON, D. C. • CLEVELAND, OHIO

BUILDINGS—LB & CA

▲ **Shoreham Terrace Homes,** c/o Henry Klar Realty, 165 Hempstead Turnpike, W. Hempstead, N. Y. Owner Builds. $2,000,000. 200 HOMES. Rte. 25A, SHOREHAM, N. Y.

Montgomery Constr. Co. & Assocs., 803 W. Main St., Grove City, Pa., LB $586,000, general constr. women's DORMITORY and utility expan. for Clarion State Teachers' College, CLARION, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. Bids Aug. 20. CD 7/29.

▲ **Ritter Bros., Inc.,** 1511 N. Cameron St., Harrisburg, Pa., LB $1,230,750, senior high SCHOOL for Susquehanna Twp. School Bd., 34th and Elmerton Ave., HARRISBURG, PA. Susquehanna Twp. Auth., 801 Wood St., Progress, Harrisburg, Pa. Bids Aug. 19. CD 8/14.

▲ **Levco Constr. Corp.,** 215 Montague St., Brooklyn, N. Y., CA $1,307,430, modernization of BLDG. 8, Middletown State Homeopathic Hospital, Proj. No. 12654, MIDDLETOWN, N. Y. Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids July 17. CD 8/12, under LB.

▲ **Colmar Constr. Co.,** 364 Gold St., Brooklyn 1, N. Y., CA $1,611,000, general constr., plumbing and drainage, heating, ventilating, electrical work and lighting fixtures PUBLIC SCHOOL 132, East 168th St. between Washington and Park Aves., Bronx Boro, NEW YORK, N. Y. Bd. Educ., 45-12 Crescent St., Long Island City, N. Y. Bids July 31. CD 8/6, under LB.

American Village Homes, c/o Lane Realty, 107-40 Queens Blvd., Forest Hills, N. Y., Owner Builds, $420,000. 30 HOUSES (second section) Deer Park Ave. south, Southern State Parkway, BABYLON, N. Y.

Country Village Homes, c/o Trylon Realty Co., 98-89 Queens Blvd., Forest Hills, N. Y., Owner Builds, $480,000, 30 HOUSES, Walt Whitman Rd. north, Northern State Hy., HUNTINGTON, N. Y.

Huntington Greens Homes, c/o Henry A. Klar Realty, 165 Hempstead Turnpike, W. Hempstead, N. Y., Owner Builds, $345,000, 20 HOUSES, Larkfield Rd. north, Jericho Turnpike, HUNTINGTON, N. Y.

Sid Farber Homes, Fallwood Parkway, Farmingdale, N. Y., Owner Builds, $540,000, 30 HOUSES (second section) Woodward Parkway, MASSAPEQUA, N. Y.

Siegfried Constr. Co., 6 North Pearl St., Buffalo, N. Y., CA Est. $900,000, LIBERAL ARTS CLASSROOM BLDG., OLEAN, N. Y. St. Bonaventure University, Olean, N. Y. Bids July 3, Awarded July 17. CD 7/3.

Sherbrooke Manor Homes, c/o Alfred Wolfe, Jericho Turnpike, Commack, N. Y., Owner Builds, $420,000, 30 HOUSES, Rte. 111, north Smithtown-By-Pass, SMITHTOWN, N. Y.

Dominic Maurer, Inc., 230 N. 11th St., Reading, Pa. LB $542,000 (5 bidders), general constr. combined elementary secondary SCHOOL addn. for Tulpehocken Area Jt. School Bd., BERNVILLE, PA. Pa. Pub. School Bldg. Auth., 101 S. 25th St., Harrisburg, Pa. Bids Aug. 19. CD 7/28.

Pa. Dpt. Property & Supplies, Box 382, Harrisburg, Pa., rejected bids July 23, ARMORY for Pa. National Gdard unit, SHARON, PA. CD 7/7, will re-advertise.

▲ **A. L. Aubinoe,** 1515 19th St. N.W., Washington, D. C., Est. $3,500,000, design and construct 8 story OFFICE, East-West Hy. and Waverly St., BETHESDA, MD.

Charles E. Brohawn & Bros., 77 Poplar St., Cambridge, Md., CA $165,954, MANUFACTURING PLANT addn., CRISFIELD, MD. South Realty Co., 114 W. Broad St., Telford, Pa. Budd Ross, 5409 Market St., Philadelphia, Pa., archt. Bids July 16. CD 7/8.

Di Sabatino & Raniere, Inc., 2000 Rodman Rd., Elsmere, Del., LB $699,900, married students, DORMITORY, NEWARK, DEL., University of Delaware, Newark. Bids Aug. 12. CD 7/29.

SOUTH

HEAVY CONSTRUCTION—BA

Fla., Ormond Beach—BA 9/16—City, City Hall, street paving, $200,000. Plans deposit $15. Briley, Wild & Assocs., 8 N. Wild Olive Ave., Daytona Beach, Fla., engrs. CD 2/5/54.

† **Louisiana**—BA 9/17—U. S. Eng., Foot of Prytania St., New Orleans, La., 420 lin. ft. pile dike constr. Red River, Caddo Parish. Inv. No. 59-42, Item D 335.54. CD 4/22/44, under Illinois-Louisiana.

† **Fla., Cocoa**—LORAC FACILITIES—BA 9/20—Procurement Office, Air Force Missile Test Center, Patrick Air Force Base, Cocoa, constr. LORAC facilities, Holopaw, Vero Beach, and Spruce Creek, Fla., IFB-08-606-59-32. Extended date. CD 7/14.

Va., Fairfax—BA 9/23—Bd. Fairfax Co. Supervs., Court House, Fairfax, integrated sewerage system, Contr. 68-A, Oakwood-Clermont sub-trunk sewers. CD 12/22/53.

BUILDINGS—BA

Fla., Kissimmee—RESIDENCES—BA 9/18—D. P. W. Development Corp. 419 S. 18 St., Birmingham Ala., 148 residences, $750,000. Plans deposit $10. Broleman & Rapp, 1216 E. Colonial Dr. Orlando Fla., archts.

S. C., Charleston—MUSEUM-LIBRARY—BA 9/25—The Citadel, Hampton Park, Charleston, museum-library, $750,000. Lockwood Greene Engineers, Inc., Montgomery Bldg., Spartanburg, S. C., engr. CD 5/13.

HEAVY CONSTRUCTION—LB & CA

▲ **VIRGINIA**—Commonwealth of Va., Dpt. Hys., 1221 E. Broad St., Richmond bids opened 8/20.

Va.—**Runions Co.** and **Talbott Marks Co., Inc.**, Clarksville, Va. LB **$1,132,939** (14 bidders) 8 bridges Contr. 5 Washington Circumferential Hy. Rte. 413 State Proj. 0413-029-006-B28, B29, B30, B31, B32, B34. Fed. Proj. I-213-1 (1) Fairfax Co.

Va.—**Moore Bros. Co., Inc.**, P. O. Box 258, Verona, Va. LB **$665,645.** (10 bidders) 3 bridges 2.20 mi. E. Int. Rte. 99. Rte. 4 State Proj. 0081-077-010 B1, B2, B3, Pulaski Co. CD 8/6.

▲† **Southern Constr. Co.**, Box 1307 Augusta, Ga., CA **$2,141,727**, improvements to 680 Wherry HOUSING PROJECT, Units, Patrick Air Force Base, COCOA, FLA., Air Force Missile Test Center, Procurement Officer, Patrick Air Force Base, Cocoa, Fla. CD 7/15.

▲ **Kenneth Fulghorn Constr. Co.**, 1462 Pensacola, Fla. CA **$2,141,727** imprvs. to 750 Wherry HOUSING PROJECT units at ELGIN AIR FORCE BASE, FLA., Procurement Officer, Elgin Air Force Base, Valparaiso, Fla. CD 7/18.

▲ **Bradford Builders, Inc.**, 132 Aragon Ave., Coral Gables, Fla., LB **$1,042,565**, Delta AIR LINE MAINTENANCE HANGAR, 20th St., Airport, MIAMI, FLA., Dade Co., Port Authority, 10th Floor, Courthouse, Miami, Fla. Bids Aug. 19. CD 8/13.

Hollis & Spann Constr. Co., Dothan, Ala. LB **$163,965** (5 bidders), WAREHOUSE and watershed, Columbia State docks, Chatthoochie River COLUMBIA, ALA. Alabama State Docks, Bd. Mobile, Ala. Former bids rejected. Mouton Engineering Co., Foot of Hurtel, Mobile, Ala., engrs. CD 5/8, under LB.

▲ **KENTUCKY**—Commonwealth of Ky., Dpt. of Hys., Frankfort,

Ky.—**Talbott Constr. Co.**, 30 Wall St., Winchester, Ky., CA **$2,959,262**, grading, drainage 5 structures (div. lanes) 6.99 mi. I-64-5(4) 93, Clark Co.;

Ky.—**Foster & Creighton Co.**, 724 First American National Bank Bldg., Nashville 3, Tenn., CA **$530,959**, grading, drainage, c. conc. paving in Albany. DF 161 (4) DF 199 (11) DS 212 (20), Clinton Co. Bids Aug. 8. CD 8/14, under LB.

BUILDINGS—LB & CA

L. P. **Cox**, Box 188, Sanford, N. C., LB **$704,268.** PHILLIPS HALL ADDN. CHAPEL HILL, N. C. University of North Carolina, Chapel Hill, N. C. Harris & Pyne, Snow Bldg., Durham, N. C. archt. Bids July 29.

▲ **G. E. Bass & Co.**, 2715 N. State St., P. O. Box 1033, Jackson, Miss. LB **3,737,033.** 320 HOUSING Cump Blvd., MEMPHIS, TENN. Memphis Housing Auth., 700 Adams St., Memphis, Tenn. Bids July 31. CD 7/14.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† Ill., **Scott Air Force Base**—RUNWAY—BA 9/18—U. S. Eng., 475 Merchandise Mart, Chicago, Zone 54, runway remedial work (FY-57) at Scott Air Force Base, Belleville, Eng., 11-032-59-7. CD 9/17.

† Wis., **Kansasville**—AIR FORCE BASE IMPRVS.—BA On Or About 9/19—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., exterior utilities and pavements incl. Schedule A, roads, storm and sanitary sewers and water distribution, Schedule B, high temperature water distribution, Schedule C, electric substation, metering station and transmission line, Richard I. Bong Air Force Base, ENG-11-032-59-11.

† Illinois—BA 9/24—U. S. Eng., 420 Locust St., St. Louis, Zone 2, Mo. first stage, main dam, Carlyle Reservoir, Kaskaskia River, approx. ½ mi. northeast of Carlyle, Clinton Co. CIVENG-23-065-59-12. CD 9/9.

BUILDINGS—BA

Ill., **Skokie**—LIBRARY—BA 9/17—Public Library, 4913 Oakton, 1 story, 110 x 210 ft. brick library, air cond., $700,000. Skidmore Owings & Merrill, 30 W. Monroe, Zone 3, archts. CD 2/26.

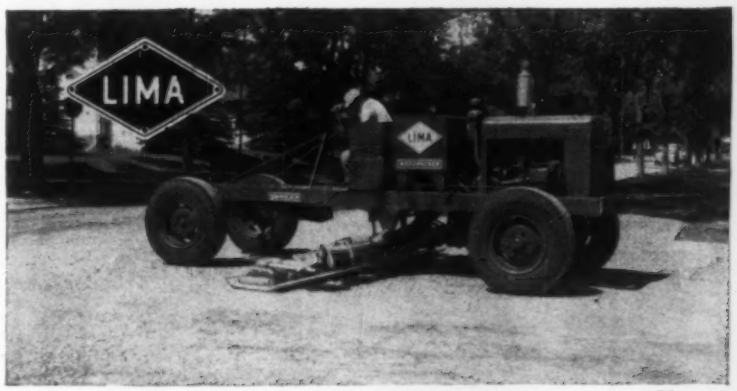
▲ Ind., **Kokomo**—HOSPITAL—BA 9/20—Comrs., Howard Co. Courthouse, 3 story County Hospital, $2,250,000. CD 12/19/56.

▲ Mich., **Ann Arbor**—SCHOOL—BA 9/24—Bd. Educ., 1220 Wells, Ann Arbor, Northwest Junior High School. $2,500,000. Plans deposit $75. Charles W. Lane & Assoc., 3366 Washtenaw, Ann Arbor, Mich., archts. CD 5/1.

† Wis., **Menasha**—ARMY RESERVE CENTER EXPANSION—BA About 9/25—U. S. Eng., 475 Merchandise Mart, Chicago 54, Ill., 1 story approx. 4,200 sq. ft., masonry assembly bldg., 1 story, approx. 2,600 sq. ft. masonry 2-Bay motor vehicle storage shed, and exterior facilities, ENG-11-032-59-12.

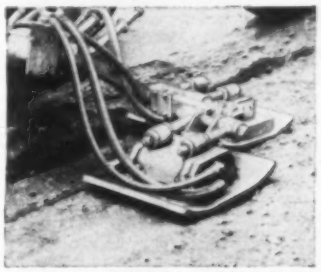
O., **Youngstown**—EMPLOYMENT SERVICE BLDG.—BA 9/26—Ohio Dpt. P. Wks., State Depts. Bldgs., Columbus, O., 2 story, steel curtain wall service bldg., Ohio State Employment Service, 2026 South Ave., $500,000. Donald Lloyd Bostwick, 2706 Bears Den Rd., archt. CD 12/16.

Wis., **Oshkosh**—PARISH HOUSE—BA 10/2—Peace Lutheran Church, 530 9 St., parish house addn. church, and gymnasium-auditorium, $670,000, Lang & Raugland, 802 Wesley Temple Bldg., Minneapolis, Minn., archts. CD 8/4.



LIMA ROADPACKER

No other compacting equipment is designed so completely for high-density consolidation of single course *Macadam Bases, Gravel Subbases* and *Soil-Cement Bases*



Widener Attachment—Vibrating shoes compact material in widening trench while Roadpacker runs on existing pavement. Easily adjusted for various width trenches.

Six 420 lb. shoes provide the vibrating and tamping action. The LIMA ROADPACKER is a cost-cutting, vibratory compactor that penetrates deeper and covers a 13-ft., 1-in. width. The shoes are raised and lowered hydraulically; compacting is done equally well forward or in reverse. The ROADPACKER travels to the job at 28 m.p.h.

Get the full story on the LIMA ROADPACKER today. See your nearby distributor, or write Construction Equipment Division, Baldwin-Lima-Hamilton Corporation, Lima, Ohio.

ROADPACKER FEATURES

- **Low maintenance**—*Rugged vibrator shoes are pressure lubricated and actuated hydraulically through a completely sealed system. There are no exposed moving parts, no oil levels to check, no breather holes through which oil can escape.*
- **Fast and maneuverable**—*Highway speeds up to 28 m.p.h., reverse speeds up to 7 m.p.h. Steers easily. For work in tight places, can be operated with only four shoes. Shoes can be folded up easily and need not be removed.*
- **Easy to operate**—*Operator is above dust, away from engine heat and exhaust for maximum comfort and efficiency. He has excellent visibility . . . controls are readily accessible.*

DISTRIBUTORS IN PRINCIPAL CITIES OF THE WORLD

LIMA Construction Equipment Division, Lima, Ohio
BALDWIN · LIMA · HAMILTON
Shovels • Cranes • Draglines • Pullshovels • Roadpackers • Crushing, Screening and Washing Equipment

DUDGEON HYDRAULIC JACKS

SALES RENTALS
• CAPACITY TO 600 TONS

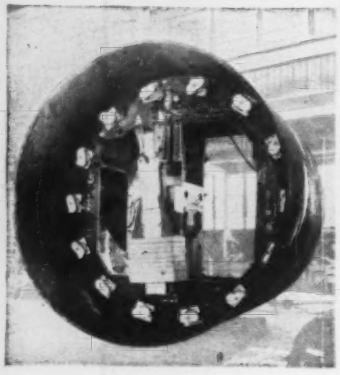
FOR:
PILE TESTING
•
UNDERPINNING
•
BRIDGES
•
PIPE PUSHING
•
SOIL TESTING

RICHARD DUDGEON INC.
709 BERGEN ST. • ST 9-4040 • BROOKLYN, N. Y.

PHOENIX BRIDGE COMPANY
Engineers—Fabricators
Erectors
Structural Steel
BRIDGES and BUILDINGS
General Office and Shops
PHOENIXVILLE, PA.
Subsidiary—Barium Steel Corporation

MAYO

SANDHOG EQUIPMENT



Design and construction of Mayo Shields and other Sandhog Equipment are backed by over 25 years of job-tested experience throughout the world.

FREE BULLETIN No. 23 shows installations of Mayo shields, cylindrical air locks, lock doors, medical locks and tunnel cars. Send for your free copy today.

SPECIAL EQUIPMENT DEVELOPED FOR SPECIAL PROBLEMS

MAYO

TUNNEL AND MINE EQUIPMENT

LANCASTER, PENNA.

GOT THIS?

(Predraining Problem)

GET THIS!

(Skilled Wellpoint Engineering)

From

GRIFFIN

WELLPOINT CORP.

881 East 141st Street, New York 54, N. Y.

Hammond, Ind. Houston, Tex. Jacksonville, Fla.

West Palm Beach, Fla

HEAVY CONSTRUCTION—LB & CA

▲ **H. R. Reger & Co.,** 1505 E. 72 Place, Chicago, Ill., CA $1,429,000 (a) central heating plant, etc. (b) jet fuel storage facilities, etc., Richard I. Bong Air Force Base, ENG-11-032-58-104, KANSASVILLE, WIS. U. S. Eng., 475 Merchandise Mart, Chicago, Ill. Bids July 23. CD 7/31, under LB.

▲† **Western Contracting Corp.,** 400 Benson Bldg., Sioux City, Iowa, CA $2,816,370, dredging Lake Nicholet, St. Mary's River, Sault Ste Marie, MICHIGAN. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. Bids Aug. 12. CD 7/24.

▲† **S. J. Groves & Sons Co.,** Wesley Temple Bldg., Minneapolis, Minn., LB $7,373,144, pavements, lighting and fuel facilities, Kinross Air Force Base, ENG-20-064-59-2, KINROSS, MICH. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. Bids Aug. 20. CD 8/12.

Contractors Service Co., 500 Sharon Ave., Cincinnati, O. LB $98,800, est. $100,000 (3 bidders) water lines, West Fork Rd., CINCINNATI, O. City, City Hall, Cincinnati, O. T. J. Montgomery, city engr. CD 2/26.

INDIANA—State Hy. Comn., John Peters, chn., State House Annex, Indianapolis, Bids opened 8/19,

Ind.—**Stone City Constr. Co.,** 910 R St., Bedford, Ind., LB $576,591, est. $616,242 (2 bidders), rein.-con. pavement. Contr. R-4530, DF-92 (10) ST-92 J, Lawrence and Monroe Counties.

Ind.—**Fauber Constr. Co.,** N. 9 St. Rd., Lafayette, Ind. LB $89,602, est. $96,206 (1 bidder), bit. pavement aggr. base. Contr. R-4527, DS-254 (2), Tippecanoe Co. CD 8/5.

† **E & C Co.,** 925 E. Albert St., Milwaukee, Wis., LB $314,922, OPERATIONAL APRON EXTENSION, General Mitchell Field, MILWAUKEE, WIS. U. S. Eng., 475 Merchandise Mart, Chicago 54, Wis. Bids Aug. 14. CD 3/2/54.

Normoyle & Berg, 2223 11th St., Rock Island, Ill. CA $328,025, sewerage treatment plant and intercepting sewer, Contr. No. 1 (East Moline).

Valley Constr. Co., 6 Ave., & 17 Rd., Rock Island, Ill. CA $178,674, sewerage treatment plant and intercepting sewer, Contr. 2 and 3 (East Moline, Ill.)

† **Wm. E. Schweitzer & Co.,** 2207 Dodge Ave., Evanston, Ill. CA $104,000, foundations and power supply for MK-10 Missile Launcher at U. S. Naval Training Center, NBy-14761, GREAT LAKES, ILL. Dist. P. Wks. Office, Ninth Naval Dist. Bldg. 1A, Great Lakes, Ill.. CD 9/16, under public bldgs.

▲ **WISCONSIN-MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul, Minn. Bids opened 8/22.

Wis.-Minn.—**Industrial Constr. Co.,** 9216 Grand Ave., Minneapolis, Minn., LB $2,282,495 (10 bidders), grade, sand-grav. sub-base, grav. base, concrete base, plant-mixed bit. surf. overall length 1 mi., in and near Red Wing; 216-432-216 ft. cantilever high truss spans, 124-150-150-150-124 ft. plate girder spans and 60 x 30 ft. beam spans, Bridge No. 9040 over Mississippi River; 31-41-41-37 x 52 ft. skewed concrete slab spans, Bridge No. 9103, Goodhue Co.; LB $589,724 (11 bidders), constr. bridge over Wisconsin Channel of Mississippi River, 1.3 mi. N. of Red Wing, Minn.; 85-85 ft. beam spans, 120-150-120 ft. plate girder spans, and 85-85 x 30 ft. beam spans, Minn. Bridge No. 9102 (Wis. Bridge No. B 47-23) Goodhue Co.

Wis.-Minn.—**La Crosse Dredging Co.,** 140 South Dearborn St., Chicago, Ill., LB $565,911 (3 bidders), grade, 1.2 mi. between North End of Bridge No. 9040 over Main Channel of Mississippi River at Red Wing and 200 ft. N. of Bridge No. 9102 over Wisconsin Channel of Mississippi River near Hager City, Wis., Goodhue Co. CD 8/6.

Bell-Reichl, Inc., 5589 S. 108 St., Milwaukee, Wis., LB $100,525 (7 bidders), general contract, MONKEY ISLAND WINTER QUARTERS, MILWAUKEE, WIS., Milwaukee Co. Park Comn., Milwaukee, Wis. Bids Aug. 20. CD 7/30.

Bell-Reichl, Inc., 5589 S. 108 St., Milwaukee, Wis., LB $87,390 (8 bidders) general contract, BLACK BEAR DENS AND MOAT at Zoo, MILWAUKEE, WIS., Milwaukee Co. Park Comn., Milwaukee, Wis. Bids Aug. 20. CD 8/6.

Hage Bros., Inc., Box 172, 128 W. Vine St., Owatonna, Minn., LB $317,000 (6 bidders), constr. sanitary sewer sys., PRESCOTT, WIS., Village, Village Hall, Prescott, Wis. Bids Aug. 18. CD 8/13.

Sugden & Sivier, Inc., 13100 Cloverdale Ave., Oak Park 37, Mich., CA $91,444, bridge and channel change; 461 ft. rein.-con. capped steel sheet pile retaining wall over Bell Branch Rouge River, WC Job No. 388-WC-58-C16, DETROIT, MICH. Wayne Co., Bd. Rd. Comrs., City-County Bldg., Detroit, Mich. Bids July 28. CD 7/17.

BUILDINGS—LB & CA

▲ **Hawthorne Park Estates, Inc.,** Rm. 313 Citizens Bldg., Cleveland, Zone 14, O. Own forces. $1,000,000. 72 suite APARTMENT PROJECT, Hawthorne Dr., MAYFIELD HGTS. O. Louis J. Rothman, 31715 Vine St., Wickliffe, O., archt. CD 4/29.

Gerritt Van Keppel Constr. Co., P. O. Box 253, De Motte, Ind., LB $900,520, 2 story, brick Crown Point High School addn., W. Joliet St., CROWN POINT, IND., School City of Crown Point, W. Joliet St., Crown Point, Ind. Bids Aug. 18. CD 8/11.

▲ **Orleans Homes, Inc.,** 110 S. Dearborn St., Chicago, Ill. Own forces. $2,000,000. 135 HOMES, storm and sanitary sewers, paving, 841-53-65-77-87 Ridge Rd., HIGHLAND PARK, ILL. Peter J. Nitto, 601 Romona Rd., Willmette, Ill., archt.

▲ **Evans Constr. Co.,** 1900 E. Washington, Springfield, Ill., CA $1,758,835, general bldg. constr. YMCA, SPRINGFIELD, ILL. Young Mens Christian Assn., 317 S. 7 St., Springfield, Ill. Awarded Aug. 21. CD 11/9/56.

Metalfab, Inc., Beaver Dam, Wis. Owner builds, $100,000, 1 story, 100 x 200 ft. concrete, steel and block PLANT ADDN., BEAVER DAM, WIS.

▲ **D. Gauser & Assocs.,** 9203 W. Blue Mound Rd., Milwaukee, Wis., LB $1,796,000 (6 bidders), 400 units MARRIED STUDENTS APARTMENTS, MADISON, WIS., Wisconsin University Bldg. Corp., Madison, Wis. Bids Aug. 14. CD 7/29.

† **Champion, Inc.,** P.O. Box 261, Iron Mountain, Mich., CA $535,270, OFF-SITE UTILITIES, Family Housing K. I. Sawyer Air Force Base. IFB-20-613-58-28. MARQUETTE, MICH. Base Procurement Officer, K. I. Sawyer Air Force Base, Marquette, Mich. CD 3/12, under Airports.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

Neb., Holdredge—BA 9/16—City, City Bldg., 750,000 gal. elevated water tank, footings, controls for existing well, necessary piping to connect to distr. sys., obstruction lights, drainage structures, etc. $165,000. Plans deposit $10. Henningson, Durham & Richardson, Inc., 2962 Harney St., Omaha, Neb., engr. CD 8/15/56.

Tex., San Antonio—BA 9/16—City, City Hall, Proj. 71-K, storm drainage, area Inspiration Hills-Lowry, Seeling, $686,000. Plans deposit $50. R. Marvin Shipman, 202 Olmos Dr. West, San Antonio, engrs. Interceptor sanitary sewer in Woodlawn Hills area, $802,760. Frank T. Drought, 342 W. Woodlawn St., San Antonio, engr. CD 12/19/57.

† **Tex., Austin**—NAVIGATIONAL AIDS—BA 9/18—U. S. Eng., Box 160, Fort Worth, constr. and relocation navigational aids, Bergstrom Air Force Base, ENG-41-443-59-7 over $75,000. Bids June 20 rejected. CD 8/14.

Tex., San Antonio—BA 9/23—City, storm drainage. Contr. 58-B $150,000-$350,000. Plans deposit $50. M. R. Mitchell & Assocs., 206 San Pedro Ave., engrs. CD 12/12.

† **Kansas**—BA On Or About 9/25—U. S. Eng., 1800 Federal Office Bldg., Kansas City 6, Mo., channel excavation and constr. levees and floodwalls along Mud Creek, Abilene. CIVENG-23-028-59-23. CD 10/9.

† **Nebraska**—BA 9/30—Bureau Reclamation, Dpt. Interior, Bldg. 53, Denver Federal Center, Denver, Colo., spillways and waterways and Siphons No. 1 and No. 9 for Culbertson Canal, Frenchman-Cambridge Division, Missouri River Basin Proj. No. 19-D-411 Spec. No. DC 5101. ENR-adv. 9/4. CD 9/16.

† **Montana**—BA 9/30—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. Fort Peck and Missouri River Basin Projs. one 230 kv. one 115 kv. and one 13.2 kv. control board sections; two sets of unmounted switchboard carrier current relaying equipment; one set of carrier-current control and line over-current ground relays and 4 carrier-current transmitter-receiver sets for Dawson Co. and Bismark Substations and Fort Peck Powerplant. Spec. DS 5088. CD 9/8/44.

† **Montana**—BA 9/30—Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. Fort Peck Proj. two 230 kv. two 115 kv. and two 14.4 kv. power circuit breakers for Dawson Co. substation. Spec. DS 5098. CD 9/8/44.

▲ **Minn., Minneapolis**—MAIN STRUCTURE, etc.—BA 10/9—Minneapolis-St. Paul Metropolitan Airports Comn., 2429 University Ave., St. Paul, 2 story, base 240 x 480, 525,000 sq. ft. main structure and elevated roadway for 350 car garage, Administration-Terminal Bldg., Wold-Chamberlain Field. $6,000,000. Thorshov & Cerny, Inc., 400 Metropolitan Bldg., Minneapolis, Minn. archt. CD 10/25/55.

† **Tex., Fort Worth**—HOSPITAL REVISION TO ELECTRICAL SYS.—BA About 10/9—U. S. Eng., Box 1600, revision hospital to electrical sys. Carswell Air Force Base, ENG-41-443-59-10. CD 9/17.

BUILDINGS—BA

Colo., Fort Collins—PLANT—BA 9/8—Valley Packing Co., Fort Collins, 1 story, 15,000 sq. ft. packing plant over $93,000. James H. Stewart, 121 N. College Ave., engr.

▲ **Minn., Minneapolis** — SECURITY BUILDING — BA 9/19—State Dpt. Admin., Div. Procurement, 19 State Capitol, St. Paul, Proj. No. 2657: employment security office, Second Ave. S. and Third St. $1,500,000. Plans deposit $50 each for general, mechanical, etc. Thorshov & Cerny, 400 Metropolitan Bldg., Minneapolis, Minn., archts. CD 12/4.

▲ **Mo., St. Louis**—DAVID P. WOHL, JR. MEMORIAL—BA 9/18—Washington University, Lindell and Skinker Blvds., St. Louis 5, 8 story, ground and sub-floors, 64,800 sq. ft. brick, stone, rein.-con., etc. David P. Wohl, Jr. Memorial, Audubon between Euclid and Kings Highway. $2,050,000. Plans deposit $100. Murphy & Mackey, 6124 Enright Ave., St. Louis 12, Mo., archts. Wm. C. E. Becker, 411 N. 7th St., St. Louis 1, Mo., structural engr. and Fed. S. Dubin, Assocs., 6124 Enright Ave., St. Louis 12, Mo., mechanical engr. CD 8/16.

HEAVY CONSTRUCTION—LB & CA

▲ **Johnson, Drake & Piper,** Baker Bldg., Minneapolis, Minn., CA **$1,570,505,** 251,000 sq. ft. Transit Sheds and Warehouse, DULUTH, MINN. Seaway Port Auth. of Duluth, 909 Alworth Bldg., Duluth, Minn. Bids Aug. 12. CD 8/15, under LB.

▲ **Engineers Limited Pipe Line Co.,** 2850 Beck St., Salt Lake City, Utah, CA est. **$3,000,000,** laying NATURAL GAS GATHERING SYSTEM from gas fields in San Juan Co. and Northern Ariz. to the processing plant being erected in San Juan Co., NEW MEXICO-ARIZONA-UTAH, El Paso Natural Gas Co., 143 South Main St., Salt Lake City, Utah. CD 2/5/53, under Texas, New Mexico, Arizona, California.

R. Maturi Corp., Box 587, Chisholm, Minn., LB **$209,689** (7 bidders), grade, sand-grav. sub-base and grav. base 3.8 mi. between 22 mi. north Grand Marais and 25.8 mi. north of here, GRAND MARAIS, MINN. Cook Co., Grand Marais, Minn. Bids Aug. 19. CD 8/1.

† **Kileen & Wille Constr. Co.,** 1402 Poplar Ave., Superior, Wis., LB **$139,388** (4 bidders), THEATER, Duluth Air Force Base, Inv. No. ENG-21-018-59-3, DULUTH, MINN. U. S. Eng., 1217 U. S. Post Office and Custom House, St. Paul 1, Minn. Bids Aug. 21. CD 8/4.

▲ **MISSOURI**—State Hy. Dpt., Jefferson City,
Mo.—**Joseph L. Pahl, Contractor,** Nevada, Mo., CA **$1,155,351,** graded earth 6.155 mi.; CA **$131,911,** graded earth 0.568 mi., both in Cooper Co.;
Mo.—**R. G. Aldridge,** 1610 Nebraska Ave., Kansas City, Kan., CA **$1,283,384,** graded earth 7.091 mi., Cooper Co. Bids July 31. Awarded Aug. 6. Grand total $2,570,646. CD 8/11, under LB.

MISSOURI—State Hy. Dpt., Jefferson City,
Mo.—**Joseph L. Pahl, Contractor,** Nevada, Mo., CA **$197,096,** 81 ft., 2-92 ft., 61 ft. plate girder span, Sta. 740 plus 52; CA **$83,418,** 2-58 ft., 2-72 ft. I-beam spans, Sta. 813 plus 27, both in Cooper Co.;
Mo.—**R. G. Aldridge,** 1610 Nebraska Ave., Kansas City, Kan., CA **$131,567,** 2-47 ft., 1-56 ft. I-beam spans, Sta. 1408 plus 63, Cooper Co.;
Mo.—**McLean Constr. Co.,** 1846 E. Sunshine, Springfield, Mo., CA **$121,697,** 93 ft. 175 ft. continuous and 152 ft., 76 ft. 228 ft. counter walls, Sta. 141 plus 27, Greene Co. Bids July 31. Awarded Aug. 6. Grand total $533,778. CD 8/11, under LB.

COLORADO—State Hy. Dpt. 4201 East Arkansas, Denver, Colo.—**Herren-Strong,** Platteville, Colo., CA **$528,535,** grading, structures and plant mixed asph. surfacing, 6.058 mi. Colo. Proj. No. S-085(3) est. $512,000. Boulder and Longmont Co. Bids Aug. 22, CD 8/15.

Mountain States Constr. 980 Simms St., P. O. Box 684 Golden, Colo., LB **$339,953** sewage treatment plant, over $73,000, DURANGO, COLO., City, City Hall, Durango, Colo.,

Refinery Eng. Co., 405½ W. Broadway, Farmington, New Mexico, LB **$203,525,** trunk line sewer, structures and sewage collection sys. over $73,000 (Durango, Colo.). Bids Aug. 19, CD 8/16.

▲† **Wade Lahar Constr. Co.,** Mountain Home, Ark., CA **$1,355,705,** clearing Table Rock Reservoir, White River Watershed, Taney, Stone and Barry Counties, Mo. and Boone and Carroll Counties, Ark. CIVENG-03-050-58-65, MISSOURI-ARKANSAS. U. S. Eng., P. O. Box 867, Little Rock, Ark. Bids July 23. Awarded Aug. 8. CD 8/1, under LB.

† **Missouri Petroluem Products Co.,** 1620 Woodson Rd., Overland, Mo., CA **$109,250,** hot mix b. cement road surf., concrete curb and gutter, drainage structures, 200 and 300 Bldg. area, IFB AV-23-037-58-123, FORT LEONARD WOOD, MO. Post Purchasing & Contracting Office, Fort Leonard Wood, Mo.

J. E. Latta Constr. Co., Inc., 6609 Latta Place, St. Louis 20, Mo., LB **$184,480,** 16,300 ft. 8- to 24-in. vitr. clay or rein.-con. sewer trunk line in Sub. Dist. 1 of River DesPeres Watershed (Creve Coeur and Frontena area) from Lindberg Blvd. and Conway Rd. to near Ballas Rd., ST. LOUIS COUNTY, MO. Metropolitan St. Louis Sewer Dist., 901 Washington Ave., St. Louis 1, Mo. Bids Aug. 19. CD 8/2.

ARKANSAS—State Hy. Dpt., State Capitol, Little Rock.
Ben M. Hogan & Co., 1100 Fairview, Little Rock, Ark. CA **$698,653.** grade, surf. treatment 7.7 mi. McGehee-Greenville, Miss. Rd. US Hy. 65 and US Hy. 82, Chicot Co. Bids opened Aug. 13, awarded Aug. 14. CD 8/5.

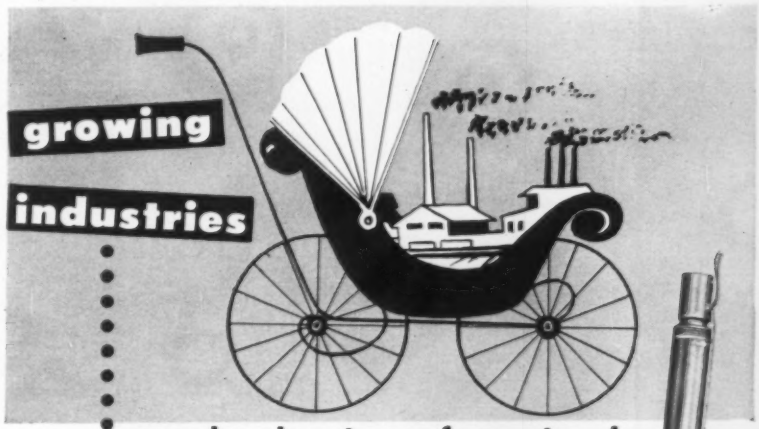
† **Moore Bros.,** 216 W. 2nd St., Pierre, S. D. LB **$465,245** (6 bidders) constr. Cheyenne River Indian Agency reservation road relocation "H", Oahe Reservoir Proj., Pierre, ENG-25-066-59-7, SOUTH DAKOTA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Aug. 19. CD 7/23.

† **St. Paul Dredging Co.,** 1397 Laurel Ave., St. Paul, Minn., LB **$68,258,** (3 bidders), small boat harbor in Mississippi River at Lansing, Inv. No. CIVENG-21-018-59-2, IOWA, U. S. Eng., 1217 U. S. Post Office & Custom House, St. Paul, Minn., Bids Aug. 21. CD 8/13.

City, City Hall, Charles City, Iowa, rejected bids Aug. 11, airport grading, bit. paving and lighting at Charles City Municipal Airport, CHARLES CITY, IOWA, CD 7/30.

Sira & Payne, 9620 John West Rd., White Rock Station, Dallas Zone 18, Tex. LB **$184,675,** constr. Como Pump Station, FORT WORTH, TEX. City, City Hall, Fort Worth, Tex. Bids Aug. 19. CD 7/23,

Steed Constr. Co., P. O. Box 964, Fort Worth, Tex. LB **$157,198** base bid. Lynnhaven water mains (Fort Worth, Tex.)



•need plenty of water!

. . .and dependable

REDA *Submergible* **PUMPS**

will provide

the water needed for *all* of your industrial requirements!

Reda manufactures a complete range of pumps for:

- wells as small as 4 inches
- lifts from 30 to over 10,000 feet
- capacities from five to over 1000 G.P.M.

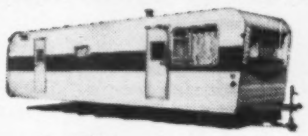
Reda Pumps are tried and proven! *Over 100,000* are installed for homes, farms, industries, municipalities . . . *wherever dependable, modern water service is required!*

Write for Industrial Pump Bulletin R-432. Complete information will be furnished promptly.

SIGN OF QUALITY SUBMERGIBLE REDA PUMPS

REDA PUMP COMPANY
BARTLESVILLE, OKLAHOMA
World's largest manufacturer of Submergible motors and pumps for over 35 years

CONTRACTORS' TRAILERS



36 FEET COMPLETE **$2495** FOB NYC
Equipped with toilet, water heater, desks, drafting table, floor heat & screens thruout—many other features!
All Sizes Built to order.
High in quality—Low in Price!
NASSAU TRAILER & MOTOR SALES
2351 JERICHO TPKE.
Garden City Park, L.I., N.Y. **PI 6-1401**

Capacity

SACHSE ELECTRIC INC.
BATON ROUGE LA.

At Penn Township Senior High School near Pittsburgh, a workman easily places Steeltex Floor Lath around a steel column. Snug-fitting Steeltex prevents cement drip-through. Architect: Joseph Hoover, AIA, Pittsburgh. Structural Engineer: Leland W. Cook, RPE, Pittsburgh. Contractor: C. De Chicchis & Co., Clairton, Pa.

Six More Architects, Contractors Tell Why Steeltex Saves Money, Speeds and Improves Construction

Whether it's in the Dominican Republic, Puerto Rico, California, New York or Pennsylvania, Steeltex is writing new chapters to a story of construction economy started more than 30 years ago.

Architects and contractors are documenting the story of Steeltex as one answer to steadily rising construction costs and shrinking budgets. They say Steeltex—the wire mesh reinforcing that carries its waterproofed form right on its back—saves money, shortens construction time and gives you a better job.

At the lavish, multi-million dollar Hotel Embajador in the Dominican Republic, Architect Roy F. France specified 244,000 square feet of Steeltex to provide combined form and reinforcing for the roof and seven floors. Said Mr. France:

"Steeltex brought 20 percent savings in time on this big job. Steeltex is easy and quick to install. This brings savings on labor costs."

Mr. France reported similar savings at the beautiful Hotel San Juan Intercontinental in Puerto Rico. This 320-room structure required 250,000 square feet of Steeltex from Pittsburgh Steel Products Division of Pittsburgh Steel Co.

Taylor Construction Co. of Miami, the general contractor, estimated savings through using Steeltex "averaged 19 percent over other systems."

Said Aaron Baer, chief of estimating for Taylor Construction:

"Where thin slab over prefabricated steel or concrete joists is the basis for design, Steeltex is in a class by itself —time-wise and cost-wise—in bringing savings."

At the Atwater, Calif., Research Project School, 30,000 square feet of Steeltex was combined with reinforcing rods to provide support for a thin shell catenary roof construction.

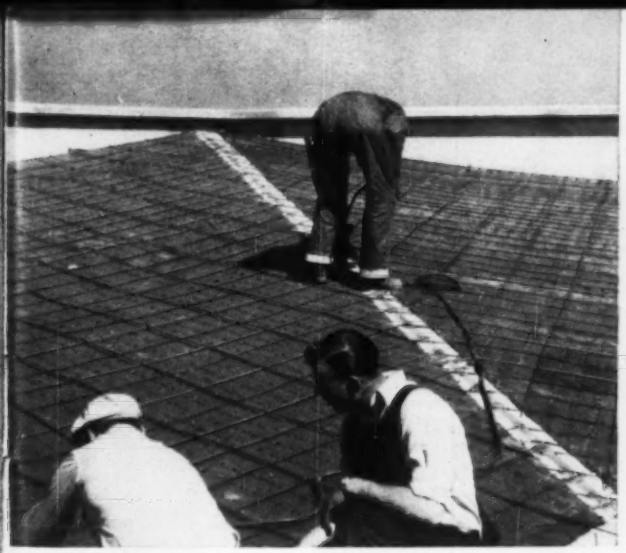
"Steeltex helped create a fireproof span of clean appearance at a cost and insulation factor equivalent to conventional wood joist classroom construction," declared Architect Frank Wynkoop, AIA, of Los Angeles.

At 6010 Wilshire Office Building in Los Angeles, 18,000 square feet of Steeltex Floor Lath saved $5,000 in labor and materials, according to Quinn and Conant, Hollywood contractors.

"Steeltex was installed in just 10 days," said Lewis F. Conant. "If we had used conventional wood forms, we would have taken 30 days.

"We have made comparisons of the cost of concrete slabs using Steeltex as opposed to two-inch planking on wood purlins. We find Steeltex and concrete is approximately 20 percent less expensive and gives the owner much more for his money." Architect for the job was Sidney Eisenshtat, AIA. Structural Engineer: Joseph Sheffet, CEAC, both of Los Angeles.

Similar commendations for Steeltex come from Dean Natali, superintendent for C. De Chicchis



Atwater Research Project School in California has 30,000 square feet of Steeltex installed to provide form in a thin shell catenary roof construction. Architect: Frank Wynkoop, AIA, Los Angeles. Contractor: Graham & Jensen, Merced, Calif.

At 320-room Hotel San Juan Intercontinental, Puerto Rico, 250,000 square feet of Steeltex supports the roof and floors. Taylor Construction Co. of Miami estimates savings through using Steeltex "averaged 19 percent over other systems." Architect: Roy F. France & Son, Miami Beach.

& Co., contractors for construction of the $5-million Penn Township Senior High School near Pittsburgh.

More than 100,000 square feet of Steeltex was installed. "An alternate material would have taken three or four times longer to install than Steeltex," said Mr. Natali.

"We used five men to put down Steeltex in the length of time it would have taken 20 men to install a sheet material."

"On top of that," Mr. Natali continued, "there is less waste with Steeltex because it prevents drip-through of cement to the floor below by fitting snugly around protruding objects."

On Long Island, N. Y., at Plainedge High School, 150,000 square feet of Steeltex provide form and reinforcing for the roof and floors. Architects for construction were Jagow & Heidelberger, Hempstead, L. I.; Structural Engineers: David R. Maiman Associates, Valley Stream, L. I.

George F. Hayden, superintendent for the contractor, Paul J. Roche, Inc., Baldwin, L. I., has used Steeltex for 20 years. Today he still looks to Steeltex to help build stronger, more durable floors and roofs.

"There's no other type of reinforcing material more economical than Steeltex," stated Mr. Hayden. "It's easy to install, eliminates form work and makes for a better slab."

All these benefits of Steeltex—and more—can be put to work for you, too. All it takes is a phone call to the Pittsburgh Steel Products sales office nearest you. Trained engineers are available to help you solve your construction problems. Call today . . . you'll be glad you did tomorrow.

Hotel Embajador in Dominican Republic has 244,000 square feet of Steeltex Floor Lath supporting the floors and roof. Architect Roy F. France of Miami Beach says, "Steeltex brought 20 percent savings in time." Contractor: Merritt-Chapman & Scott Corp., New York.

▶ See Sweets Catalog Section 2-B

Steeltex®

Pittsburgh Steel Products

a division of Pittsburgh Steel Company

Grant Building • Pittsburgh 30, Pa.

District Sales Offices

Atlanta	Cleveland	Dayton	Los Angeles	Pittsburgh
Chicago	Dallas	Detroit	New York	Tulsa
		Houston	Philadelphia	Warren, Ohio

THE BRUNTON* POCKET TRANSIT

IT'S HANDY...
weighs only 9 oz.; 2¾" x 3" x 1⅛"; easy to carry in pocket, on belt, in car.

IT'S VERSATILE...
ideal for preliminary and supplementary surveying; used as a compass, transit, level, plumb, alidade, clinometer. Shows direction to 1°; level, slope or grade within 1°.

IT'S MADE TO LAST A LIFETIME
"Over 60,000 Brunton Transits since 1896"
See your local engineering supply house or WRITE FOR CATALOG

*Brunton is a registered trademark of

WM. AINSWORTH & SONS, INC.
2151 LAWRENCE ST. • DENVER 5, COLORADO

Save Time
Finding Blueprints
Save Space

Provides a mobile, protective, vertical file for 1200 large prints in only 24 lineal inches... all organized and identified for instant use. Sheets can't get mislaid or lost... no folding, rolling or stacking.

PLAN HOLD Vertical Filing Systems bring engineering efficiency to the care and use of plans, prints, maps, all large sheets. See your engineering and office supply dealer or write for Catalog 582 to Plan Hold Corp., South Gate, California.

BUILDINGS—LB & CA

▲ **Farnsworth & Chambers Co., Inc.,** 3601 Brock St., Houston, Tex., CA **$1,927,000.** 183-unit "Golden Age" HOUSING, Tex. 6-18, SAN ANTONIO, TEX. San Antonio Housing Auth., 400 Labor St., San Antonio, Tex. Bids Aug. 14. CD 8/20, under LB.

Lloyd Denton, Contractor, 1042 Milam Bldg., San Antonio, Tex., Own forces, **$348,000.** 34-low priced DWELLINGS, SAN ANTONIO, TEX. CD 8/21.

Forgy Constr. Co., 4600 Broadway, San Antonio, Tex., CA **$500,000.** MOTOR HOTEL, SAN ANTONIO, TEX. Motor Hotel Corp., 6936 San Pedro Ave., San Antonio, Tex. Brown & Cowan, 6936 San Pedro St., San Antonio, archts. Dennis E. Feigenspan, 6936 San Pedro St., and Barry F. Johnson, 1102 Basse Rd., San Antonio, engrs. CD 12/23/57, under LB.

▲ **Col. Jos Carmack & Assocs.,** 434 E. Hathaway St., San Antonio, Tex., cancelled bids, BOWLING CENTER, SAN ANTONIO, TEX., Est. **$1,000,000.** CD 8/20.

BUILDINGS—LB & CA

▲ **A. A. & E. B. Jones,** 1050 Jason, Denver, Colo., CA **$3,838,816,** 4 story, 288,000 sq. ft. 45 classrooms part bsmnt. Abraham Lincoln High School, DENVER, COLO., School Dist., No. 1, 414 14th St., Denver, Colo., Bids Aug. 13.

Bell Plumbing, 4201 E. Evan Ave., Denver, Colo., Mech. CA **$589,988,** Abraham Lincoln High School, (Denver, Colo.). CD 8/18, under LB.

▲† **J. Briscoe,** P. O. Box 188, Stillwater, Okla., CA **$1,074,919,** TRAINING CENTER and maintenance shop ENG-34-066-58-72, NORMAN, OKLA. U. S. Eng., Box 61, Tulsa, Okla. Bids June 4.

FAR WEST

HEAVY CONSTRUCTION—BA

Calif., La Mesa—BA 9/16—Helix Irrigation Dist., 8111 University Ave., La Mesa, 4,279 ft. of 6- to 22-in. water pipeline. Proj. 7716. $50,000. CD 3/5/56.

Calif., Santa Ana—BA 9/17—Orange Co., Court House, imprv. Jamboree Rd. 2.2 mi., Costa Mesa. $100,000.

BUILDINGS—BA

Ore., Gresham—SCHOOL—BA 9/16—Gresham School Distr., 128,000 sq. ft. high school. Plans deposit $60. Burns, Bear, McNeil and Schneider, 2940 S. E. Belmont St., Portland, archts. CD 4/22.

Calif., Norwalk—BOILER PLANT—BA 9/17—State Div. Architecture, 1100 S. Grand Ave., Los Angeles, Metropolitan State Hospital, installing burners, piping, pumps, valves, air compressors, boiler plant, H.O. 3718GC-28. $79,000. CD 1/10.

▲ **Calif., Del Paso Heights**—SCHOOL—BA 10/1—Grant Union High School Dist., Grand Ave., New Campos Verde Junior High School Watt Ave. ad Stevens Dr., **$1,700,000.** Starkes & Jozens & Nacht, Native Sons Bldg., Sacramento, archts. CD 10/9/56.

Calif., Burbank—CLUB—Bids Asked—Toluca Lake Executive Club Co., 5731 Cahuenga Blvd., North Hollywood, 3 story, 35,000 sq. ft. club. $350,000. Construction Management Inc., 5729 Cahuenga Blvd., North Hollywood, engr.

HEAVY CONSTRUCTION—LB & CA

† **Robert Kleppinger,** 9905 S. Mansel St., Torrance, Calif., LB **$589,600** (12 bidders) clearing, Trinity reservoir site, Stuart Fork Area and downstream to Trinity Dam, Central Valley Proj. Spec. 200C-392 Lewiston, Trinity Co. CALIFORNIA. Bureau Reclamation, Dpt. Interior, Lewiston, Calif. Bids Aug. 19. CD 8/5.

George Savala Paving Co., 213 S. Hawthorne Blvd., Hawthorne, Calif., LB **$210,776** (5 bidders) imprv. Vermont Ave., Gage Ave. to 79 St. LOS ANGELES, CALIF. City, City Hall, Los Angeles, Calif. Bids Aug. 20. CD 8/1.

Griffith Co., 1060 S. Broadway, Los Angeles, Calif., LB **$191,349** (3 bidders) street imprvs. Vineland Ave. and Morpark St. Imprv. Dist. (Los Angeles, Calif.)

Frank Chutuck, 5091 Holt Ave., Ontario, Calif., LB **$128,058** (8 bidders) sewers, Cherrylee Dr. El Monte, LOS ANGELES, CALIF. Los Angeles Co. Hall of Record, Los Angeles, Calif. Bids Aug. 15. CD 7/30.

McGuire & Hester, 796 66 Ave., Oakland, Calif., LB **$157,792** (5 bidders) clearing, dredging, etc. Channel imprvs. Dry Creek, Spec. FC-5-6 near Decota, OAKLAND, CALIF. Alameda Co. Flood Control & Conservation Dist., Court House, Oakland, Calif. CD 10/22/53.

J. E. Haddock Ltd., 3538 Foothill Blvd., Pasadena, Calif., LB **$153,770.** imprv. Washington St. Mentone Ave. to Los Robles Ave., PASADENA, CALIF. City, 100 N. Garland St., Pasadena, Calif. Bids Aug. 20. CD 3/14/56.

Shea Co., 2801 W. Mission Rd., Alhambra, Calif., LB **$75,607** (2 bidders) wid'n., surf. 5 mi. county Hy. 76-D and 10-D, near here, REDDING, CALIF. Shasta Co., Court House, Redding, Calif.

P & Z Co., Inc., 120 S. Maple Ave., South San Francisco, Calif., LB **$251,113** (7 bidders) clearing, dredging etc. Matadero Creek imprvs. near Santa Clara, SAN JOSE, CALIF. Santa Clara Flood Control & Water Conservation Dist., Civic Center, 1 and Rosa Sts., San Jose, Calif. CD 11/1/56.

Oscar C. Holmes, 927 Arguello St., Redwood City, Calif., LB **$125,931** (4 bidders) clearing, dredging, etc. Hoobe Creek imprvs. near here. (San Jose, Calif.)

C. R. Butterworth Co., 1401 N. Gaffey St., San Pedro Calif., LB **$115,608** (3 bidders) West Ditch Edinger St. to Monte Vista Ave., SANTA ANA, CALIF. City, City Hall, Santa Ana, Calif. Bids Aug. 18. CD 8/1.

Sully-Miller Co., 19761 Old County Park Rd., Orange, Calif., CA **$184,841.** imprv. Oak St., Assessment Dist. 199, SANTA ANA, CALIF. City, City Hall, Santa Ana, Calif. Bids Aug. 18. Awarded Aug. 18.

† **Gordon Fields,** 1555 E. St., San Bernardino, Calif., LB **$256,230,** est. $200,000 (17 bidders), EXCHANGE SALES STORE, George Air Force Base, ENG-04-353-59-4, VICTORVILLE, CALIF., U. S. Eng., 751 S. Figueroa St., Los Angeles, Calif. Bids Aug. 19. CD 7/30.

† **Nelson Brothers Constr. Co.,** 347 W. 16 St. S., Salt Lake City, Utah, LB **$446,073,** (4 bidders), 8 reservoirs and Bountiful Subdistrict laterals, Davis aqueduct lateral sys., Weber Basin Proj., DC-5079, UTAH, Bureau Reclamation, Dpt. Interior, Ogden, Utah. Bids Aug. 21. CD 8/12.

Gibbons & Reed, Box 2429, 825 W. 9 St. N., Salt Lake City, Utah, LB **$54,590,** 1 m.g. tank type water reservoir and appurtenant pipe line at Mount Olyspus Bench for Big Cottonwood and Deer Creek water supply, SALT LAKE CITY, UTAH, Bd. City Commrs., Herman J. Hogensen, city recorder, City-County Bldg., Salt Lake City, Utah. Bids Aug. 20. CD 6/3.

† **Cherf Bros. & Sandkay Contractors, Inc.,** Ephrata, Wash., CA **613,386,** Foster Creek channel and road work, Chief Joseph Dam, Bridgeport, Inv. 58-49, WASHINGTON. U. S. Eng., 1519 S. Alaskan Way, Seattle 4, Wash. Bids Aug. 14. CD 8/20, under LB.

Lake Hills Sewer Dist., 15450 Lake Hills Blvd., Bellevue, Wash., cancelled bids to have been opened Aug. 21. treatment plant, REDMOND, WASH., $100,000. CD 8/13.

† **Procurement Office,** Geiger Air Force Base, Spokane, Wash., rejected bids Aug. 7, remodeling Bldg. No. 306 into guest house, Geiger Air Force Base, IFB 614-59-4, SPOKANE, WASH. CD 7/24.

† **Procurement Office,** Geiger Air Force Base, Spokane, Wash., rejected bids Aug. 8, remodeling PX Bldg. No. 515, Geiger Air Force Base, IFB 614-59-2, SPOKANE, WASH. CD 7/24.

D. Diamond Corp., Box 367, Portland, Ore. LB **$76,922,** (4 bidders), small mammal GROTTOS AND CAGES, zoo, PORTLAND, ORE., City of Portland, City Hall, Portland, Ore.

Teeples and Thatcher, 8850 S.E. Otty Rd., Portland, Ore., LB **$73,400** (4 bidders) railroad STORAGE TUNNEL Municipal zoo (Portland, Ore.). CD 7/31.

† **Northwest Marine Iron Works,** 2516 N.W. 29 Ave., Portland, Ore., LB **$52,334,** (12 bidders), one 84 in. jet-flow gate valve with hydraulic hoist, hanger, gate position indicator and connector and liner for auxiliary outlet works at Trinity dam, Central Valley Proj., DS-5083, CALIFORNIA. Bureau Reclamation, Dpt. Interior, Denver Federal Center, Denver, Colo. Bids Aug. 19. CD 7/30.

CALIFORNIA—State Div. Hys., 1120 N St., Sacramento. Bids opened Aug. 21,

Westates Electrical Constr. Co., 8900 Bellanca Ave., Los Angeles, Calif., LB **$73,531,** (5 bidders), traffic signal modification sign structures, hy. lighting, channelization at 8 locations Foothill Blvd., State Sign Rte. 118, between Lowell Ave., Glendale and Hampton-Georgian Rd., Flintridge, Los Angeles Co. Bids Aug. 21. CD 7/24.

CALIFORNIA—State Div. Hys., 1120 N St., Sacramento, Bids opened Aug. 20.

Calif.—Don F. Shuster, 220 Pine St., Willits, Calif., LB **$229,080,** (7 bidders), clearing, grubbing, 6.7 mi. future Redwood Freeway (U. S. Hy. 101) Humboldt Co.;

Calif.—Dan Caputo Co., 650 Race St., San Jose, Calif., LB **$213,621,** (7 bidders), repairing 0.2 mi. Los Gatos Creek Channel, State Sign Rte. 17 in Los Gatos, Santa Clara Co.;

Calif.—Fredrickson Brothers, 1259 65 St., Emeryville, Calif., LB **$255,336,** (5 bidders), reconstr., realignment 1.9 mi. FAS Co. Rd. 954 (Tuolumne-Sonora Rd.), Tuolumne Co. CD 7/24.

CALIFORNIA—State Div. Hys., 120 S. Spring St., Los Angeles. Bids opened Aug. 21,

J. A. Payton, P.O. Box 207, Riverside, Calif., LB **$853,524,** (12 bidders), grading, surf. 5.3 mi. 2-lane highway on State Sign Rt. 71, near Chino, San Bernardino Co. Bids Aug. 21. CD 7/23.

CALIFORNIA—State Div. Hys., 1120 N Sacramento. Bids opened Aug. 21,

Leo L. Davis, P.O. Box 546, Fort Jones, Calif., LB **$92,045,** (8 bidders), 2 rein.-con. bridges on FAS Co. Rd. 1089 (West Side Rd.) near Etna Siskiyou Co. Bids Aug. 20. CD 7/24.

ABC Constr. Co. of Southern California, and **W. C. Baker,** 12420 S. Bloomfield Ave., Norwalk, Calif., LB **$171,268,** (17 bidders), storm drain in Burbank Blvd. from Ontario St. to Rose St. and in Magnolia Blvd., BURBANK, CALIF. City, 275 E. Olive St., Burbank, Calif. Bids Aug. 20.

Valley Engineers Inc., Pox 412, Fresno, Calif., LB **$288,316,** (3 bidders), sewerage collection system, LA MESA, CALIF. Santee County Water Dist., La Mesa, Calif. Bids Aug. 18. CD 8/6.

▲ **D. M. Drake Co.**, 1600 N.W. Savier St., Portland, Ore., LB $3,831,637, (11 bidders), grading 11 mi. roadbed, Great Northern Railroad's Okanogan branch, constr. 9 mi. U. S. Hy. 97 along west bank of Columbia River, WASHINGTON, Chelan County Public Utility Dist., 327 N. Wenatchee Ave., Wenatchee Wash. Bids Aug. 22. CD 7/30.

BUILDINGS—LB & CA

▲ **Hoffman Constr. Co.**, 715 S.W. Columbia St., Portland, Ore., CA $1,921,000, Park Vista CO-OPERATIVE APARTMENT BLDG., PORTLAND, ORE. Park Vista Corp., Commerce Bldg., Portland, Ore. Awarded Aug. 20. CD 4/30.

▲ **C. L. Peck**, 816 W. 5th St., Los Angeles, Calif. CA $5,000,000, 15 story OFFICE, Wilshire Blvd. and Beaudry Sts., LOS ANGELES, CALIF., Signal Oil & Gas Co., 811 W. 7th St., Los Angeles, Calif., Pereira & Luckman, 8534 Sunset Blvd., Los Angeles, Calif., archts.

▲† **Theo. G. Meyer & Sons**, 200 Quint St., San Francisco, Calif., CA $1,339,170, 88 units (7 two story bldgs.) Capehart Family HOUSING, incl. utilities, landscaping, Oakland Army Terminal, ENG-58-339, OAKLAND, CALIF. U. S. Eng., 180 New Montgomery St., San Francisco, Calif. Bids June 16. CD 6/23, under LB.

Luekenga Constr. Co., Nampa, Idaho, CA $744,000, 4 SCHOOLS, Meridian, South Meridian, Eagle and Ustick-Cloverdale, MERIDIAN, IDAHO, School Bd., Meridian, Idaho, H. G. Thompson, 6001 Fairview Ave., Boise, Idaho, archt. CD 2/28.

▲ **Stolte Inc.**, 8451 San Leandro St., Oakland 21, Calif. CA $2,104,200, BIOLOGICAL SCIENCES BLDG., at University of California, Davis Campus DAVIS, CALIF. University of California, Architects & Engineers Office, Arboretum and Hutchinson Dr., Davis, Calif. Bids Aug. 7. CD 8/14, under LB.

▲ **Pacific Coast Builders**, 1 South Park St., San Francisco, Calif., LB $3,040,000 Base Bid, 2 story rein.-con. 160,000 sq. ft. Pacific HIGH SCHOOL, SAN LEANDRO, CALIF. San Leandro Unified School Dist., 451 W. Joaquin St., San Leandro, Calif. CD 12/6/56.

CANADA

HEAVY CONSTRUCTION—BA

P. E. I., Alberton—HARBOUR IMPROVEMENTS—BA 9/17—Dpt. P. Wks., Hunter Bldg., Ottawa, Ont., railway wharf extens., $100,000. Plans deposit $10.

HEAVY CONSTRUCTION—LB & CA

▲ **Highway Paving Co. Ltd.**, 3701 Cote St. Michel Rd., Montreal, Que. LB $2,501,074 (3 bidders) 200 x 10,000 ft. paved runway and taxiway, Montreal Airport, Dorval MONTREAL, QUE. Dpt. of Transport, Hunter Bldg., Ottawa, Ont. Bids Aug. 19. CD 8/6.

BUILDINGS—LB & CA

▲ **Stearns-Roger Engineering Co. Ltd.**, 330 9 Ave. SW, Calgary, Alta., CA $3,000,000, pilot cycling proj., Windfall gas field for separation, dehydration facilities, central plant, condensate stabilization and storage (30,000 Mcf daily capacity), compression facilities and housing, ALBERTA. Canadian Fina Oil Ltd., operator for proj., Bamlett Bldg., 2 fl., Calgary, Alta.; Hudson's Bay Oil and Gas Co.; Ltd., 7 Ave. W., Calgary, Alta.; Pan American Petroleum Corp., 310 9 Ave. W., Calgary, Alta.

▲ **Foundation Maritime Ltd.**, 135 Lower Water St., Halifax, N. S., CA est. $1,750,000, (9 bidders), 4 story and penthouse, 81x286 ft., rein.-conc. foundation structural steel frame, brick walls with stone facing, hot water heating SCIENCE BLDG., HALIFAX, N. S. Dalhousie University, Studley Rd., Halifax, N. S. Bids July 22. Awarded Aug. 15. CD 7/11.

ALASKA

HEAVY CONSTRUCTION—LB & CA

† **Fairbanks Bldg. Contractors**, 1441 Laurene, Fairbanks, Alaska, LB $236,300 (3 bidders) steel frame, power generator bldg. at King Salmon Airport, Inv. 5-59-7, NAKNEK, ALASKA. CAA Anchorage, Alaska. Bids Aug. 18. CD 8/7.

BUILDINGS—LB & CA

▲† **Morrison-Knudsen Co.**, 319 Broadway, Boise, Idaho and **Patti-MacDonald Constr. Co.**, 1310 S. Grand St., St. Louis, Mo., CA $2,657,827, 25 BUILDINGS, totaling 187,714 sq. ft. with utilities for 800-man Construction Camp, preliminary to constr. ICBM Detection Center, Inv. 59-14, CLEAR, ALASKA. U. S. Eng., Anchorage, Alaska. Bids Aug. 19. CD 8/22 under LB.

LATIN AMERICA

BUILDINGS—LB & CA

▲ **Panedile Peruano, S.A.** affiliate of Edison Corp., Milan, Italy, CA Est. $4,448,000. finance and construct Machua Picchu Hydroelectric plant in Urubamba Canyon, PERU Curzo (Corp. for Reconstruction and Development) 483 Nueva Baja, Curzo. CD 5/2.

acker LD core drills

"ALWAYS GET THEIR CORES!"

Acker's low-cost LD Core Drill was specifically designed for sensitive, hand lever feed drilling to permit even unskilled operators to recover core from broken difficult formations.

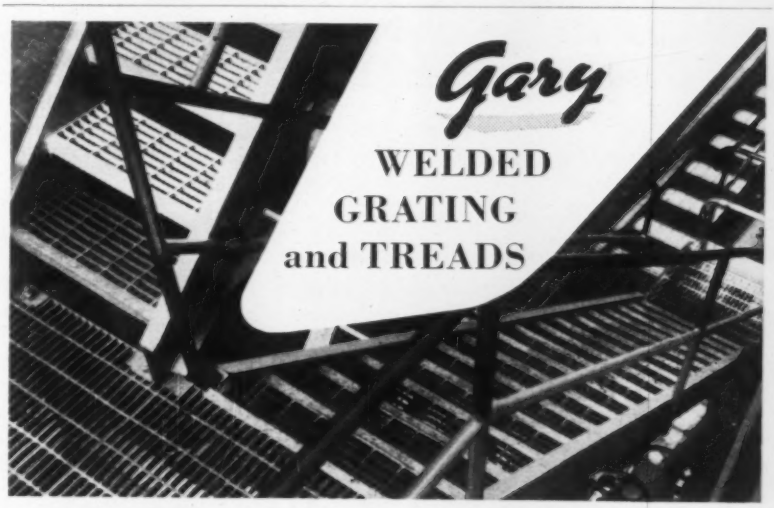
Even so, we were particularly gratified to learn from the Boring Soils & Testing Co., that their Acker LD Rig successfully obtained cores from extremely difficult coral rock formations in Bermuda. This, despite the failure of other rigs to obtain cores!

The LD is completely self-contained and is available for jeep, trailer, truck or skid mounting. It makes *diamond core drilling possible even in the roughest terrain!*

If you want more information about the Acker LD, please write for Bulletin 21. ENR

ACKER DRILL CO., Inc.
P.O. BOX 830 • SCRANTON, PA.

Over 40 years of experience manufacturing a complete line of diamond and shot core drills, accessories and equipment.



Get all the facts. Write for Bulletin

- **TAILOR MADE**—for most economical installation.
- **RIGID STRENGTH**—sturdy resistance-welded construction.
- **LIGHT WEIGHT**—for greater load bearing capacity.
- **SELF-CLEANING**—for reduced maintenance costs.
- **OPEN CONSTRUCTION**—gives maximum ventilation and illumination.

Ask for Bulletin E-98

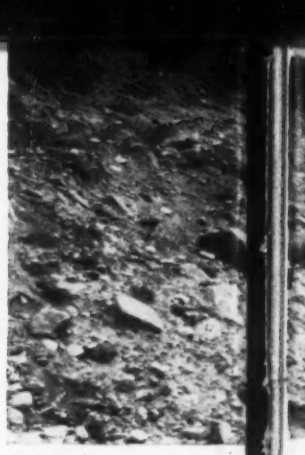
ROCKWELL SRA
ROCKWELL SPRING & AXLE CO.
Gary Grating Division
4004 EAST SEVENTH AVE., GARY, INDIANA

Built-in *GO-power* gives you more work-output per dollar invested

Seven fast, powerful L-W Adams* model graders —

190 hp† 160 hp 135 hp† 123 hp 115 hp 80 hp 60 hp

†with POWER-Flow® torque-converter drive



You buy a grader for *one reason* . . . PROFIT! To earn top profit on your investment, your grader must have the *GO-power* to produce more work in less time.

L-W Adams model graders give you more "go," more *useable* power . . . extra work-output per unit, compared to other graders. Size for size, they provide widest selection of "just-right" power-speed combinations . . . more transmission-gear choices for working, maneuvering, traveling . . . always at fastest practical rate.

15 speeds to match power to load

Fast-blading LeTourneau-Westinghouse graders with standard transmission give you more gear-ratios in the normal work-range, so you can always grade at or very near full-rpm engine-power. On most jobs your L-W can cut deeper, push more dirt, move it faster. Grader completes each task sooner . . . has spare time to handle extra work every day. Heavy-duty, 80 to 160-hp L-W Adams graders afford you 15 full-power speeds . . . 8 forward, 4 reverse, 3 (optional) creepers. 60-hp utility Model 220 is also tops in its class, with 10 full-power speeds, including optional creepers.

Full-hp "muscle" at all speeds

POWER-*Flow* drive on 135-hp and 190-hp L-W Adams models lets you apply full-hp push-power at any speed . . . even from a dead stop! Torque converter and constant-mesh transmission provide the effective work-power of *infinite* gear-ratios in 4 speed-ranges, both forward and reverse. This gives you maximum thrust for starting the load . . . lets you accelerate quickly to blade dirt just as fast as *full* engine-power can move it. That's one of the main reasons why POWER-*Flow* graders give you more work-output than other graders of similar size and power.

Time-savings add extra output

The resulting big output becomes even bigger, because L-W graders waste less time in travel, turn-arounds, and positioning. These Adams machines move job-to-job, and between work assignments, faster than other graders (to 27.4 mph). And on one-way blading, your L-W makes more "passes" per hour, because it can back-up faster than other-make graders . . . 2 to 4 times as fast.

Bonus push-power

L-W heavy-duty graders deliver a greater proportion of developed engine-power to tandem wheels. You get extra push-power because all gears and shafts in transmission, final drive, and tandems, turn on anti-friction bearings. Very little horsepower is lost thru friction. A larger percentage of engine power is made available as extra blade-thrust . . . extra *GO-power* to complete heavy work faster.

ASK FOR DEMONSTRATION

We'll be glad to arrange it! You'll see for yourself the extra profit potential that Adams *GO-power* will add to your fleet. Call or write for complete facts and figures.

TEXAS: At work for Claude Robinson, Borger, Tex., L-W Adams 550 grader smooths and levels oilfield drill-site, near Lipscomb. Grader prepared drill-site and also built 600′ dirt access road, all in less than one-half day.

VIRGINIA: "There's no question about it, the Adams has plenty of real work-power," says P. C. Goodloe, Fredericksburg. Here contractor's Model 660 L-W grader cut side banks, preparatory to widening a city street.

VERMONT: L-W 60-hp Model 220 Adams grader handled all blade-work on regrading and blacktopping of this gravel road. "Our Adams does very good work . . . we couldn't expect any more (from this-size machine)," says Owner Ralph Baslow, Ira, Vt.

CALIFORNIA: At 4.7 mph, L-W grader spread heavy blade-loads of base on this City of Oakland street, for Independent Construction Co., El Sabrante. Owner Wm. E. Craft reports "... best 'blade' ever, by *any* company."

ARIZONA: Torque-converter-equipped 190-hp L-W POWER-Flow 660 grades tough volcanic cinder at high speed, for Copper State Constr. Co., Mesa. "Best grader on the market... moves more dirt, and faster," says Owner Link Colvin.

*Trademark G-1918-DC-2

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

FOREIGN

HEAVY CONSTRUCTION—LB & CA

▲ **Amsterdamsche Ballast Maatschappij**, Amsterdam, Netherlands. CA est. $8,000,000, dredging in Hooghly near Fulta Point near here. International Bank has made loan CALCUTTA, INDIA. Comrs. for the Port of Calcutta, Calcutta, India. CD 7/21.

PROPOSED PROJECTS

WATER SUPPLY

Fla., Fort Lauderdale—City, City Hall, water treatment plant addn. $850,000. Philpott, Ross & Saarinen, 1016 N. E. 7th Ave., consult. engrs. Bids target date Oct. 1. CD 4/9.

SEWERS, WASTE DISPOSAL

Conn., Fairfield—Town, Town Hall, 1.84 mi. sewer trunk line from Nathan Hale St. to Cleveland Ave., $610,000. Bowe, Albertson & Assocs., 75 West St., New York, N. Y., consult. engrs.

Ind., New Albany—City, C. Pralle Erni, mayor, City Hall, trunk and lateral sewers, $400,000. Work to start this fall.

▲ **Me., Bangor**—City, City Hall, parking facilities and interceptor sewer sys., Kenduskeag Stream. $1,500,000. Metcalf & Eddy, Statler Bldg., Boston, Mass., engrs. CD 7/17.

N. J., Roselle—Borough, Borough Hall, sanitary and storm drains, Columbus Ave., Peach Orchard Brook, W. Third Ave., Prosper Ave. and Aldene Rd., and storm sewer at Seventh, Drake and Harrison Aves., $700,000. Franklin Hudson, 18 West Jersey St., Elizabeth, consult. engr. Morton Leber, Borough Hall, Roselle, boro engr.

▲ **N. C., Burlington**—City, City Hall, plans by Glace & Glace, 2771 Paxtang Ave., Harrisburg, Pa., sewage collection and treatment project. $2,000,000.

▲ **O., Akron**—City, City Hall, Botzum sewage disposal plant, $1,250,000; repairs, imprvs. to Botzum sewage plant; addnl digestion capacity, sludge thickener, imprv. water supply and minor repairs, $550,000. CD 12/2/54.

▲ **O., Bowling Green**—City, Mayor Clarence Dick, City Hall, $800,000 bond election Nov. 4, sewer line imprvs. $1,600,000. CD 11/8/54.

O., Columbus—City, City Hall, storm sewer, Frebis-Fairwood area, $816,000. H. G. Dill Co., 2607½ N. High St., engr.

▲ **Pa., McKeesport**—City, City Hall, intermediate sewage treatment works, interceptors and pumping stations. $5,393,000.

▲ **Tex., Fort Worth**—City, City Hall, postponed bond election Sept. 9, incinerators $1,550,000. CD 7/21.

BRIDGES

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston,

Framingham—overpass or by-pass, Framingham Interchange Rte. 126 and Rte. 135 and Rte. 9 and East-West Toll Rd., $3,000,000. Constr. late 1958 or 1959. Tekton Assoc., Inc., 200 W. Central St., Natick, consult. engr. CD 9/26/57.

▲ **Ill., Chicago**—Bureau Engineering, 320 N. Clark, Zone 10, add 39 ft. to width of Cicero Bridge over Sanitary and Ship Canal, truss and new fdn. $2,500,000-$3,000,000 Dick Van Corp, c/o owner, engr. CD 6/10/57.

▲ **MINNESOTA**—State Hy. Dpt., 1246 University Ave., St. Paul,

Ramsey Co.—constr. 1,197 ft. span, 4-lane, Br. No. 9300 over Mississippi River, West Seventh St.-Ft. Snelling. $3,000,000. Expected to be under contract by 1960, A. E. LaBonte, bridge engr. CD 12/1/43.

STREETS AND ROADS

▲ **ARIZONA** — State Hy. Comn., 206 S. 17th St., Phoenix,

Pima and Cochise Counties—43.5 mi. 4 lane hy. with traffic interchanges, U.S. 80 from Tucson to Benson. $13,450,000.

▲ **CONNECTICUT**—State Hy. Dpt., 165 Capitol Ave., Hartford,

New London and Waterford—first section 1 mi., New Interstate Route 95, frontage roads, Gold Star Memorial Bridge approaches, Vauxhill St. to West approaches, FAI-82, $1,294,000, bids in 1958; second section 3.6 mi., New Interstate Route 95, Vauxhill St. ext. to connection with Conn. Tpk., FAI-82, $3,672,000, bids in 1961.

Groton, Stonington and North Stonington—Third section 15.2 mi., New Interstate Route 95, replacement of Route 84 East of Thames River to Rhode Island Line, FAI-82, bids in 1967. CD 8/14.

▲ **O., Toledo**—Lucas Co. Comrs., Court House, widening Laskey Rd. from Secor to Crabb Rds., $2,000,000. Guy E. Neeper, county engr. CD 5/11/55.

▲ **Tex., Fort Worth**—City, City Hall, postponed bond election Sept. 9, streets, storm sewers, traffic signals, street lighting. $22,875,000. CD 7/22.

Utah, St. George—City, sidewalks, Dist. 5 $471,000.

AIRPORTS

▲† **Wash., Seattle**—RADAR UNIT AND BEACON—Civil Aeronautics Admin., 16 and Constitution Ave. N. W., Wash., D. C., military radar unit to provide information to be used by Civil Aeronautics Admin. control center. $1,000,000; air traffic control radar beacon, $190,000. Work to start this year.

LATIN AMERICA

▲ **Ecuador, Guayaquil** — PORT FACILITY — Autoridad Portuaria de Guayaquil, deep water port facility. $17,000,000. Palmer & Baker, 957 Springhill Ave., Mobile, Ala., consult. engrs.

PUBLIC BUILDINGS

Ark., Camden—HOUSING—Camden Housing Auth., 40 brick duplex housing proj. $800,000.

▲ **Calif., Berkeley** — EDUCATION-PSYCHOLOGY — University of California, Admin. Bldg., plans by Gardiner A. Dailey, 442 Post St., San Francisco, 5 and partial 7 story H-shaped education-psychology bldg. $7,000,000. H. J. Brunnier, Sharon Bldg., San Francisco, Calif., consult. engr. CD 3/15/57.

▲† **Calif., Los Angeles**—POST OFFICE, TERMINAL ANNEX—General Services Admin. 18th and F Sts. N. W., Wash., D. C., plans by Kistner, Wright & Wright, 1125 W. 6th St., U. S. Post Office, Terminal Annex imprvs. $3,820,000.

Calif., Redwood City—REHABILITATION CENTER—San Mateo County, Courthouse, Crystal Springs Rehabilitation Center near here $849,000.

▲ **Calif., San Francisco**—FINE ARTS—City and San Francisco County, Dpt. P. Wks., City Hall, bond election Nov. 4, reconstr. Palace of Fine Arts. $3,600,000.

Calif., San Pablo—SCHOOL—San Pablo Elem. School Dist., 2707 Dover St., plans by Schactman & Velikonia, 333 Marilyn St., Vallejo Dover Elementary School. $587,000. CD 11/27/56.

▲ **Conn., New Britain**—SCHOOL—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by Henry F. Ledorf, 95 Elm St., Hartford, vocational school. $3,000,000. Walter J. Douglas Assocs., 1009 Farmington Ave., West Hartford, consult. engrs. CD 3/29/56.

▲ **Conn., Storrs**—DORMITORY—State P. Wks. Dpt., 165 Capitol Ave., Hartford, plans by McKim, Mead & White, 101 Park Ave., New York, N. Y., dormitory, Univ. Conn. $1,200,000. CD 10/31/56.

Fla., Miami—GARAGES—City Comm., Municipal Justice Bldg., 1145 N. W. 11 St., municipal parking garage, $250,000, Alexis B. Kononoff & Assocs., 620 N. W. 32 St. archts and consult. engrs.; municipal parking garage between N. E. 1st and 2nd Sts., and N. E. 2nd and 3rd Aves., $250,000, Rader & Assocs. 111 N. E. 2nd Ave., archts and consult. engrs.

▲ **Ill., Dixon**—HOSPITAL—Dixon Pub. Hospital, 403 S. 1st St., plans by Dane D. Morgan & Assocs., 314 N. 4th St., Burlington, Iowa, 3 story, brick hospital addn., bit. paving. $1,250,000. CD 3/26.

▲ **Ind., Danville**—HOSPITAL—Comrs. Hendricks Co. Courthouse, plans by Yeager & Assocs., 822 Ohio St., Terre Haute, hospital, U. S. 36, $1,500,000. CD 11/29.

▲ **Ky., Hopkinsville**—HOUSING—Hopkinsville Municipal Housing Comn., 80 unit low-rent housing development. $1,000,000. CD 12/16/49.

▲ **Ky., Lexington**—COURT HOUSE—City, City Hall, plans by Meriwether Marye & Assocs., 248 E. Short St., Lexington, Ky., Fayette County court house. $2,700,000.

▲ **Mass., Everett**—HOUSING FOR ELDERLY—City Housing Auth., 17A Drive, Everett, plans by William W. Drummey, 80 Boylston St., Boston, Mass., housing for elderly. $1,500,000.

Mass., Longmeadow—SCHOOL—Town, Grassy Gutter Rd., plans by Alderman & MacNeish, 594 Riverdale St., West Springfield, Mass., archts.-engrs., junior high school. $500,000. Constr. 1959.

† **Mich., Lansing**—POST OFFICE—General Services Admin., 18th and F Sts. N. W. Wash., D. C. plans by O. J. Munson Assoc., 1110 S. Pennsylvania, remodeling U. S. Post Office, $680,000.

▲ **Nev., Reno**—SCHOOLS—Washoe County School Dist., Courthouse, plans by Alegre & Harrison, 500 Plumas St., 80,000 sq. ft. each 2 junior high schools, $2,000,000.

N. J., Boonton—SCHOOL—Bd. Educ., Twp. of Boonton, bond election Sept. 9, school, Powerville and Valley Rds. Micklewright & Mountford, E. Stuyvesant Ave., Trenton, archts. CD 5/22.

▲ **N. J., Trenton**—SCHOOL—Bd. Educ., Ewing Twp., bond election Sept. 23, Elementary-Junior High school, Ewingville Rd., Ewing Twp. $1,800,000. CD 4/16.

▲ **O., Akron**—SCHOOL—Bd. Educ., 70 N. Broadway, plans by Tuchman & Canute, United Bldg., Junior High School, Ellet St. and Blair Ave., $1,000,000 Southwest Junior High School, East Ave., and Northwest Junior High School, Fairfax Rd. $1,600,000. CD 4/15.

O., Blue Ash—MUNICIPAL—City, City Hall, Cooper Rd., bond election Nov. 4, municipal bldg. $500,000.

O., Centerville—SCHOOL—Washington Twp. Bd. Educ. bond election Sept. 23, elementary school, high school addn., $940,000. Walker, Norwich & Assoc., 12 W. Monument Ave., Dayton, archts.

▲ **O., Cincinnati**—SCHOOL—Oak Hills School Dist., 3900 Race Rd., bond election Nov 4, 2 elementary school bldgs $1,500,000. CD 6/23.

▲ **O., Cleveland**—SCHOOL—Comrs. Cuyahoga Co. Court House, Zone 13, bond election Nov. 4, Blossom Hill Girls School, Brecksville, $1,325,000. CD 5/20/54.

▲ **O., Euclid**—HIGH SCHOOL—Bd. Educ., 23131 Lake Shore Blvd., plans by Fulton, Dela Motte, Larson & Nassau, 6014 Euclid Ave., Cleveland, Zone 3, junior high school on Ellnore Ave., $1,650,000. CD 11/11/55.

▲ **O., Fairview Park**—SCHOOL—Fairview Park Bd. Educ. 4407 W. 213 St., Cleveland, Zone 26, bond election Nov. 4, school addn., $1,600,000. Fulton, Dela Motte, Larson & Nassau, 6014 Euclid Ave., Cleveland, Zone 3, archts. CD 5/11/54.

O., Finneytown—SCHOOL—Finneytown School Dist., Winton Rd., bond election Nov. 4, high school. $429,000.

O., Miamsburg—SCHOOL PROGRAM—Bd. Educ., bond election Nov. 4, school program. $650,000.

Pa., Christiana—SCHOOL—Colerain Twp. School Dist. Rd. 1, Christiana, elementary school, Colerain Twp. $369,600.

▲ **S. C., Laurens**—HOSPITAL—Laurens County Hospital Bd., hospital, Clinton. $1,200,000.

▲ **Tex., Dallas**—SCHOOLS—Dallas Ind. School Dist. 3700 Ross St., plans by Braden & Jones, 100 Glass St., elementary school 6300 Elam Rd., Pleasant Grove $750,000. CD 10/24/52. Junior high school, Wheatland, Polk St. $1,750,000. CD 12/15/54.

▲ **Tex., Fort Worth**—CITY HALL—City, City Hall, postponed bond election Sept. 9, 6 story addn. to city hall. $1,550,000. CD 7/22.

▲ **Tex., Fort Worth**—CIVIC AUDITORIUM—City, City Hall, postponed bond election Sept. 9 civic auditorium. $8,500,000. CD 7/21.

Tex., Fort Worth—LIBRARY, etc.—City, City Hall postponed bond election Sept. 9, 1 story addn to main library, and constr., 4 branch libraries $850,000. CD 7/22.

▲ **Tex., Fort Worth**—MUSEUM, etc.—City, City Hall, postponed bond election Sept. 9, Western Museum and Western Town. $1,250,000. CD 7/22.

▲ **Tex., Fort Worth**—POLICE STATION JAIL—City, City Hall, postponed bond election Sept. 9, police station and jail. $2,750,000. CD. 7/22.

▲ **Tex., Fort Worth**—SUB GARAGES—City, City Hall, postponed bond election Sept. 9, sub-garages $250,000. CD 7/22.

Tex., Quanah—SCHOOL—Quanah Ind. School Dist., plans by Fred Bufford & Assocs., 500 Interurban Bldg., Dallas, Zone 1, high and elementary school addns. $350,000.

▲ **Wis., Elkhorn**—HOME FOR AGED—Walworth Co. plans by Ebling Plunkett & Keymar, 1220 N. Milwaukee St., Milwaukee, Zone 2, Home for Aged $1,400,000.

▲ **Ont., London**—COLISEUM—City, City Hall, plans by Victor J. Blackwell and E. H. Hagarty, London, Ont., 215x366 ft. coliseum, $1,500,000. CD 11/18/53.

COMMERCIAL BUILDINGS

▲ **Ark., Fayetteville**—RESIDENTIAL DEVELOPMENT—Cy Carney & Assocs., 800 homes and shopping center, 400 acre site. $10,000,000.

Conn., Norwich—MEDICAL CENTER—Dr. John G. Raymer, chn., 59 McKinley Ave., plans by Richard Sharpe, 71 East Town St., 3 story medical center at W. W. Backus Hospital. $350,000. Fred S. Dubin Assocs., 178 S. Whitney St., Hartford, consult. engr. Robert W. Loomis, 32 Maple Ave., Windsor, structural engr. CD 7/16.

▲ **Conn., Seymour**—HOUSES—Walter F. Molsick, New Haven Rd., 108 houses, Eleanor Rd., $1,080,000.

▲ **Conn., Wilson**—BUSINESS CENTER—Worcester Realty Co., Windsor Ave., business center, Windsor Ave. $1,500,000.

▲ **Ill., Chicago**—OFFICE—John Blair & Co., 520 N. Michigan Ave., plans by Naess & Murphy, 80 E. Jackson Blvd., 10 story, brick office bldg. SE corner of Michigan Ave. and Erie St. $4,500,000. CD 3/7.

Mass., Brookline—SCHOOL—Maimonides School, 98 Washington St., Roxbury, Mass., plans by Harvey & Provost, 150 Causeway St., Boston, Mass., school, Chestnut St. $500,000. Constr. 1959.

▲ **Mass., Northampton**—HOSPITAL—Cooley-Dickinson Hospital, 30 Locust St., Northampton, plans by James H. Ritchie & Assoc., 135 Clarendon St., Boston, Mass., hospital addn., Locust St. $1,500,000. CD 6/9/53. Constr. 1958.

▲ **Minn., St. Louis Park**—APARTMENT—S. Shapiro, pres. Hennepin Tranfer Co., 23 N.E. Fourth St., Minneapolis, and W. B. Lee, 4829 West Lake St., Minneapolis, plans by S. C. Smiley & Assocs., 1750 Hennepin Ave., Minneapolis, Lake Plaza Apartment, incl. two 64-unit, 6 story each and four to six 16-unit, 1 story each, West Lake St. and S of Fern Hill School. $3,500,000.

▲ **Mo., Ferguson (St. Louis 21, P.O.)**—HOSPITAL—Franciscan Sisters of Our Lady of Perpetual Help, 3419 Gasconade St., St. Louis, Zone 18, plans by Marcel Boulicault, 411 N. 7 St., St. Louis, Zone 1, St. Francis Hospital, Florissant Rd. between Fairview Ave. and Brotherton Lane. $5,000,000. CD 8/14.

▲ **N. J., Atlantic City**—MOTEL—Owner c/o Roy E. Anderson, archt., 401 E. Nevada Ave., Pleasantville, motel, swimming pool, $1,000,000, S. B. & B. H. Strouse, Guarantee Trust Bldg., Atlantic City, engrs.

▲ **N. J., East Orange**—APARTMENT—Peter F. Fasberg & Assocs., c/o Isadore Naftali, archt., 312 High St.,

At Blackstone River Flood Control Project

wet footing, narrow cuts fail to slow down L-W haulers

To greatly reduce the threat of floods — with its inevitable loss of life and property — the U. S. Corps of Engineers is constructing numerous flood control projects on our rivers. One of these is the Blackstone River project at Woonsocket, R. I.

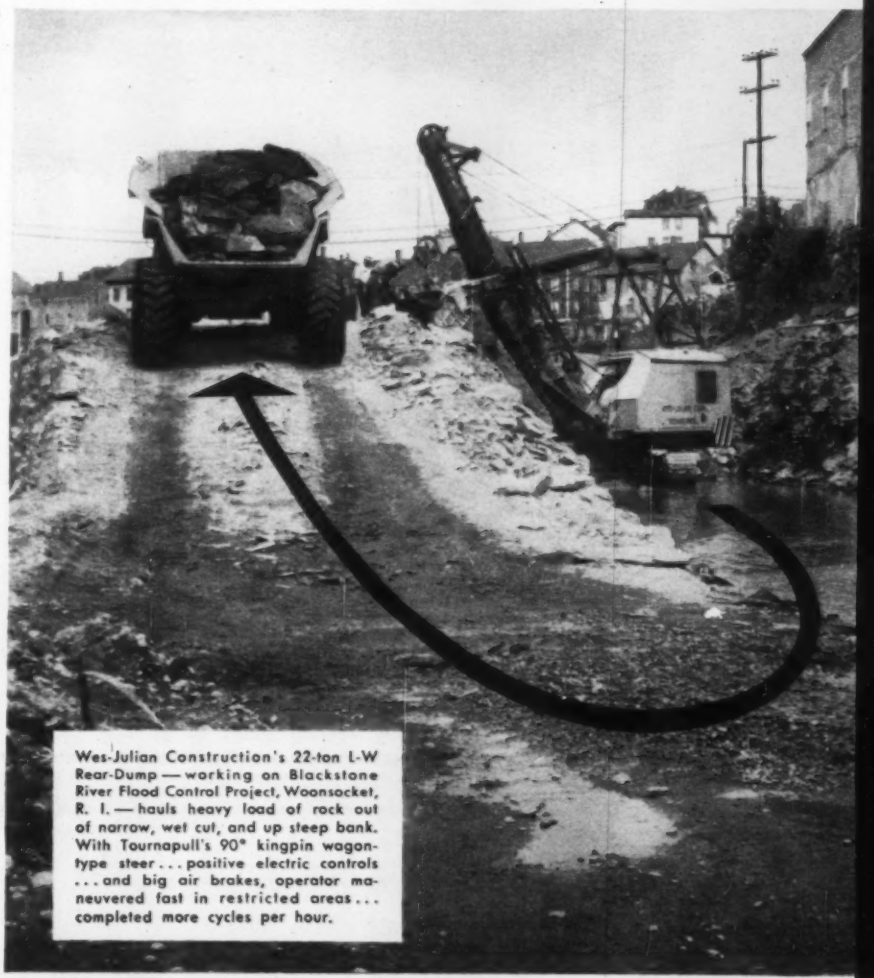
Wes-Julian Construction Corporation of Dedham, Mass., contracted to handle 2 phases of this job. One is to build a dam; the other is to deepen, widen, and straighten the river. To complete the latter job, the firm is moving 500,000 yd of earth and rock. Included in contractor's high-speed earthmoving fleet are 2 LeTourneau-Westinghouse C Tournapulls® with 22-ton Rear-Dumps, 2 L-W tractor-drawn 18-yd scrapers, and a 210-hp rubber-tired Tournatractor®.

Short turns speed cycles

To straighten the river, it was necessary to cut a channel through hard rock. Working in this wet, narrow area, 210-hp L-W Rear-Dumps' short-turn radius came in mighty handy. (In haul position, unit makes continuous 180° turn in 28'8" . . . in dump position, it turns in only 20'8".) This unique maneuverability enabled operator to spot fast under dipper . . . to work safely, easily. Also, the L-W haulers' power-transfer differential kept drive wheels from slipping on the slick, rocky footing . . . ensuring traction for steady, profitable hauling.

You'll find — as did Wes-Julian Construction Company — that LeTourneau-Westinghouse Rear-Dumps haul steadily in poor footing and in narrow or congested work areas. Let us give you the whole story on these high-production, pivot-steer haulers. Available in 3 sizes: 11, 22, and 35 tons. Call or write for demonstration.

CR-1926-DCJ-1



Wes-Julian Construction's 22-ton L-W Rear-Dump — working on Blackstone River Flood Control Project, Woonsocket, R. I. — hauls heavy load of rock out of narrow, wet cut, and up steep bank. With Tournapull's 90° kingpin wagon-type steer . . . positive electric controls . . . and big air brakes, operator maneuvered fast in restricted areas . . . completed more cycles per hour.

LeTOURNEAU-WESTINGHOUSE COMPANY, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

Where quality is a habit

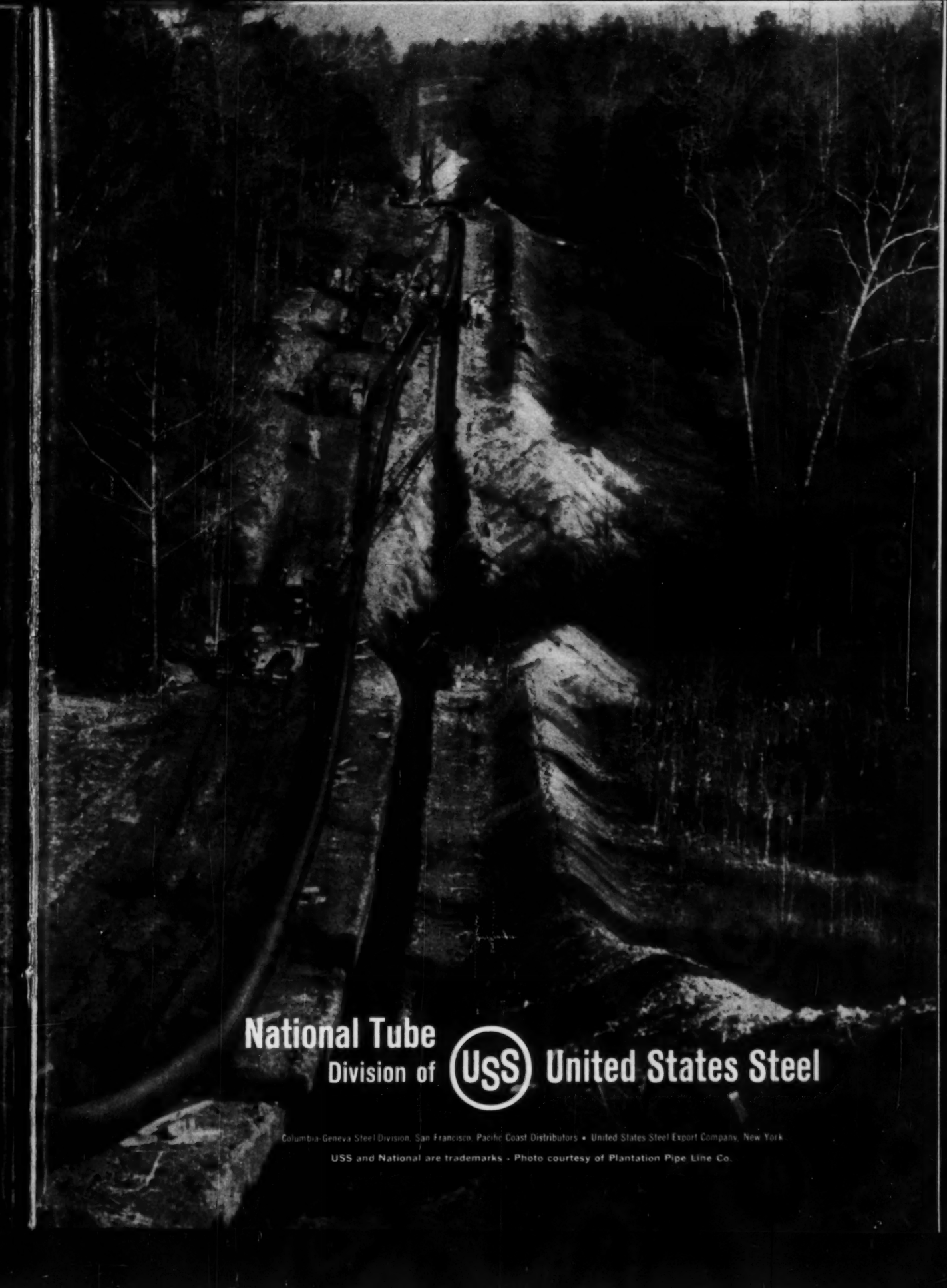
USS

NATIONAL LINE PIPE

serving all America

Seamless and Electric-Weld

2-inch through 36-inch



Columbia-Geneva Steel Division, San Francisco, Pacific Coast Distributors • United States Steel Export Company, New York

USS and National are trademarks · Photo courtesy of Plantation Pipe Line Co.

Newark, 17 story apartment, 265 Prospect St. $3,500,000.

▲ **N. J., Springfield**—HOUSES—Jeffroe Estates, c/o Max Sherman, 744 Broad St., Newark, 50 houses, Shunpike Rd., $1,500,000.

▲ **N. Y., Buffalo**—MOTEL, etc.—150 Delaware Ave., Inc., c/o Benderson Development Co., 123 Franklin Ave., Buffalo, 2 story 80-100 unit motel, 100-car parking, coffee shop, Delaware near Mohawk St. $1,000,000.

N. Y., New York—APARTMENT—Barker Holding Corp., 1156 Castle Hill Ave., Zone 61, plans by H. Herbert Lubin, 201 W. 72 St., Zone 23, 6 story apartment, west side of Barker Ave., between Thwaites Place and Reiss Place. $375,000.

▲ **N. Y., New York**—APARTMENT—New York Hospital, 525 E. 68 St., plans by Frederick G. Frost & Assocs., 144 E. 30 St., Zone 16, 13 story apartment, 428-36 E. 69 St. $1,300,000.

▲ **N. Y., New York**—APARTMENT—350 E. 52 St. Corp., c/o J. J. Kessler & Sons, archts., 551 Fifth Ave., New York, Zone 17, 14 story apartment, 939-43 First Ave. $1,000,000.

▲ **O., Bedford Heights**—HOMES—The Dover Co., 3763 Lee Rd., Cleveland, Zone 28, plans by E. Keith Haag, 2765 Hudson Dr., Cuyahoga Falls, 400 homes, Bedford Ridge Estates, Solon Rd. near Columbus Rd., $7,200,000.

▲ **O., Toledo**—OFFICE—Ohio Bell Telephone Co., 121 Huron St., plans by Bellman, Gillett & Richards, 1600 Madison Ave., 7 story office and equipment building, east side of Erie St., between Monroe St. and Jefferson Ave. $2,000,000.

S. C., Florence—MOTOR COURT—Holiday Inn Motel, Williamsburg, Va. motor court. $750,000.

▲ **Pa., Coatesville** — RESIDENTIAL DEVELOPMENT — Owner, c/o Paoli Realty Co., Paoli, 300 home residential development. Over $5,000,000.

S. D., Sioux Falls—BOWLING CENTER—Bowling, Inc., Fred J. Hecher Sr., mgr., 710 Terrace Pl., plans by Harold Spitznagel & Assocs., 1800 S. Summit, 100x167 ft. block, brick bowling center. $500,000.

▲ **Tex., Beaumont**—DWELLINGS—H. G. Nichols, Willis Thames & Sandy Hawthorne, Developers, 1872 Calder St., 1400 dwellings $35,000,000. 6-10 year program.

▲ **Tex., Georgetown**—HOME FOR AGED—Central Texas Conference of the Methodist Church, 1st Methodist Church, plans by Page, Southerland & Page, 602 W. Ave., Austin, home for aged. $1,000,000. CD 8/18.

▲ **Tex., Irving**—SHOPPING CENTER—Sid Wright Realty & Insurance Co., 203 S. Jefferson, Williamsburg Shopping Center, $1,000,000; area and hard-paved auto center, $75,000, at Rock Island and Rogers Rd.

▲ **Utah, Salt Lake City**—SUBDIVISION DEVELOPMENT—Mooney Real Estate, Inc., 120 E. 9th St., Olympus Cove subdivision development: sewer, water, paved roads, curb and gutter furnished. $4,000,000.

▲ **Ont., Hamilton**—OFFICE—Owner, c/o Percy C. Walton, 2 King St. W., office, 100 Main St. W., $4,000,000. John B. Parkin & Assoc., 1500 Don Mills Rd., Toronto, consult. engrs.

Ont., Toronto—MOTEL-RESTAURANT—Commercial Land Development Ltd., 283 D Danforth Rd., motel-restaurant, boat storage bldgs., marine railway, dock, etc., Duffins Creek. $700,000.

▲ **Que., Quebec City**—HOUSING PROJECT—Les Patios, Inc., 86 Cote de la Montagne, 168 unit low cost housing project, near St. Malo Industrial Center, No. 5, $2,000,000. Jean Claude La Haye, 1244 Albert Lozeau St., consult. engr.

INDUSTRIAL BUILDINGS

▲ **Ark., Fayetteville**—PLANT—Campbell Soup Co., 100 Market St., Camden, N. J., poultry processing plant addn. $1,000,000.

▲ **Colo., Littleton**—LABORATORY—Martin Co., 1250 S. Highway 75, plans by Raymond H. Erwin & Assoc., 1500 Denver Club Bldg., Denver, 2 story research laboratory. $2,500,000.

▲ **Colo., Rangely**—POWER PLANT—Moon Lake Electrical Assoc., Vernal, Utah, power plant, 2 diesel generator units, incl. structures, sub.-stations, wiring, switch gear. $1,350,000. A. C. Kirkwood & Assocs., 7800 The Paseo, Kansas City, Mo., consult. engrs. CD 1/20, under Unclassified.

▲ **Miss., Yazoo City**—PLANT—First Mississippi Corp., Gloster, Miss., paper bag manufacturing plant. $1,000,000.

Tex., Houston—PLANT—Barclite Corp. of America (New York, N. Y.), 813 McKee St., plant, mfg. fiberglass panels. $750,000.

Tex., Houston—PLANT—Kane Boiler Works, Inc., Bankers Mtg. Bldg., addnl. floor expansion of plant. $500,000.

Tex., Houston—WAREHOUSE—National Industries Corp., National Industries Bldg., Dallas, warehouses; Unit No. 1, $500,000; Unit No. 2, $500,000; Unit No. 3, $500,000. Unit No. 4 $500,000. Unit No. 5 $500,000; Unit No. 6 $500,000, all on 14 acre site.

UNCLASSIFIED

▲ **Calif., San Francisco**—MAINTENANCE YARD—City and San Francisco County, Dpt. P. Wks., City Hall, bond election Nov. 4 maintenance yard for Dpt. of Electricity. $1,500,000.

▲ **Calif., San Francisco**—MAINTENANCE YARD—City and San Francisco Co., Dpt. P. Wks., City Hall, bond election Nov. 4 maintenance yard for Dpt. P. Wks. $1,300,000.

▲ **Calif., San Francisco**—PARK—City and San Francisco County, Dpt. P. Wks., City Hall, bond election Nov. 4, park adjacent to Embarcadero and near Ferry Bldg. $2,785,000. CD 11/13/47.

† **D. C., Wash.** —PARK IMPRVS.—National Park Service, Dpt. Interior, 19 and C Sts. N.W., Zone 25, reconstr. Anacostia Drive, $96,800; reconstr. Wise Rd., Rock Creek Park, $125,000; extend parking area, Amphitheater, Rock Creek Park, $125,000; replace bridge, Sherrill Dr., Rock Creek Park, $217,500. National Capitol Parks. CD 1/26/55.

† **Missouri**—PARK IMPRVS.—National Park Service, Dpt. Interior, 19 and C Sts., Wash. 25, D. C., buildings and utilities, George Washington Carver National Monument. $305,300.

† **North Carolina**—PARK IMPRVS.—National Park Service, Dpt. Interior, Interior Bldg., 19 and C Sts. N. W., Wash. 25, D. C., marine parking area, R-38-1, continuation of Cape Point Rd. sys., incl. completion of Loop Rd., roads and parking overlook, Cape Hatteras. $171,500 (appropriated).

† **North Carolina**—PARK IMPRVS.— National Park Service, Dpt. Interior, Interior Bldg., 19 and C. Sts. N.W., Wash. 25, D. C., bridge and approaches, R-14-3, surf. roads and parking area, R-12-3, grade and surf. roads and parking areas, expansion area, R-164 entrance road and court, camptenders residence R-113-1, nature trails with signs and markers R-254, Great Smoky Mountains. $134,000 (appropriated).

† **Pennsylvania**—PARK IMPRVS.—National Park Service, Dpt. Interior, 19th and C Sts. N.W., Wash. 25, D. C., resurf. Buford Ave., Reynolds Ave. to Mummasburg Rd., Howard Ave., Mummasburg Rd. to Harrisburg Rd., Warren Ave., Sykes to Crawford Aves., Gregg and Confederate Cavalry Ave., Low Dutch Rd. to Rummel woods, constr. parking area and walks, Cyclorama, reconstr. Reynolds Ave. and build bridge, Gettysburg National Monument. $232,500.

▲ **Pennsylvania**—GAS PIPE LINE—Manufacturers' Light & Heat Co., Union Trade Bldg., Pittsburgh, 18 mi. pipe line 20 in. between Abbottstown, Adams Co. and a point in Manchester Twp., York Co. $1,645,000.

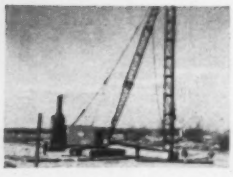
▲ **Tex., Fort Worth**—PARK, RECREATION—City, City Hall, postponed bond election Sept. 9, park dpt. addns. $1,500,000; recreation dpt. addns. $850,000. CD 7/22.

† **Virginia**—PARK IMPRVS.—National Park Service, Dpt. Interior, 19th and C Sts. N.W., Wash. 25, D. C., drainage and surf. Rte. 1, 4 and 504, 2.3 mi. Prince William Forest. $105,800.

THIS SIGN...

Stands For Reliability

GUILD PILE DRIVING



Inside a building . . . out in a desert . . . along the shore line— no matter where the job—anywhere in the United States, no matter what the time of year, the climate, or the soil condition, fast-acting C. L. GUILD has a record for successfully completing piling jobs. Specialists in the use of COBI Cast-in-Place Piles, experts in driving every type of pile on any type of job. Ask for factual data.

Call C. L. Guild for estimates on any type of piling job anywhere in the country.

SPECIALISTS IN THE USE OF COBI PILES

C. L. GUILD CONSTRUCTION CO., INC.

90 Water Street, East Providence, R.I.

BOSTON, MASS. SYRACUSE, N.Y. WASHINGTON, D.C. HOUSTON, TEXAS KANSAS CITY, MO.

Bids—Low Bids—Contracts—Second Section

NEW ENGLAND

HEAVY CONSTRUCTION—BA

† **Connecticut**—HOUSING—BA On Or About 9/16—U. S. Eng., 150 Causeway St., Boston, Mass., drainage imprvs. for family housing, Milford, Conn. $5,000. CD 2/13/57, under Uncl.

Mass., Quincy—BA 9/16—Comr. P. Wks., City Hall Annex, rein.-con. drains, Sachem St. $300,000. Plans deposit $15. Metcalf & Eddy, Statler Bldg., Boston, Mass., engrs. CD 1/31/52.

CONNECTICUT—BA 9/15—State Hy. Comr., 165 Capitol Ave., Hartford,

Elmwood—underpass, New Britain Ave. under N. Y., N. H. and H. R.R., widen underpass from 38 to 74 ft. with 60 ft. roadway and 2 sidewalks, Proj. 155-55. Roland L. Booth, State Hy. Dpt. Engr.

BUILDINGS—BA

Mass., Amherst—ARMORY—BA 9/19—Commonwealth of Mass., University of Mass., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, U 57-2, Contr. 1-R.O.T.C., armory and classroom at University of Mass. $453,000. Plans deposit $40. Clinton F. Goodwin, 25 Washington Sq., Haverhill, Mass., archt. CD 10/25/56.

BUILDINGS—SLC

Vt., Bennington — LIBRARY — Bennington College, Bd. Trustees, Bennington, soon lets contract library. $500,000. Carl Kotch & Assoc., 55 Brattle St., Cambridge, Mass., archts. CD 8/12, under Public Buildings.

HEAVY CONSTRUCTION—LB & CA

MAINE—State Hy. Comn., State Office Bldg., Augusta,

Cianchette Brothers, Inc., Pittsfield, Me., CA $157,278 (3 bidders), Lyons Road Bridge, Sidney, Proj. No. I-95-6(13)114, Kennebec Co.; CA $136,417 (5 bidders), Armstrong Rd. Bridge, Interstate Proj. I-95-6(22)122, Oakland and Waterville. Bids Aug. 20. CD 8/12.

▲ **MAINE** — State Hy. Comn., State Office Bldg., Augusta,

Me.—**J. R. Cianchette,** Pittsfield, Me., CA $567,756 (5 bidders), grading, drainage and base project. 1.334 mi. FAP I-95-6(19)122, Oakland and Waterville;

Me.—**Hornbrook, Inc.,** Madawaska, Me., CA $501,918 (4 bidders), grav. road 5.267 mi. FAP No. F-050-3 (8) Contr. 2, Grand Isle and Madawaska;

Me.—**Forest Frederick,** Pittsfield, Me., CA $281,403 (5 bidders), b. conc. and bridge structure 3.371 mi. (stage constr.) FASP No. S-0215(5), Liberty and Montville. Bids Aug. 20. Grand total $1,351,077.

MAINE—State Hy. Comn., State Office Bldg., Augusta, bids opened 8/20.

S. L. Gordon and A. D. Ingalls, Middle Rd., Portland, Me., LB $208,227. (6 bidders), b. conc. road and bridge structure 2.386 mi. FASP No. S-0113(2), Windham.

VERMONT—State Hy. Dpt., State Office Bldg., Montpelier,

Howard G. Calkins, Danville, Vt., CA $512,356 est. $500,000. grading, drainage, sub-base with single tack coat of refined tar and blade mix of peastone seal with cutback asph. surf. course incl. 3-span composite WF beam bridge, Coventry-Newport Center Rd., Coventry-Newport. Bids Aug. 22. CD 8/11.

▲ **MASSACHUSETTS**—Commonwealth of Mass., Dpt. P. Wks., 100 Nashua St., Boston, bids opened 8/26,

V. Barletta Co., 10 Whipple St., Roslindale, Mass., LB $1,633,424 Est. $1,776,267, hy. and bridge FAI Rte. N-90. I-W90-5(6)97, Worcester. CD 8/12.

E. I. O'Neill & Sons Constr. Corp., Box 868, Holyoke, Mass., LB $84,223 Est. $88,300, U-603-Contr. No. 2—grading Women's Physical Education Fields—University of Mass., AMHERST, MASS. Commonwealth of Mass., Dpt. Educ., c/o Div. Bldg. Constr., 38 Chauncy St., Boston, Mass. Bids Aug. 22. CD 8/5.

Coken Co., 449 Cranston St., Providence, R. I., LB $142,446, Bid 71 Proj. URI-36 addn. and imprvs. to ELECTRICAL DISTRIBUTION SYSTEM, University of R. I., KINGSTON, R. I. State R. I. & Prov. Plants, Div. Purchase, State House, Providence, R. I. CD 7/24/58.

BUILDINGS—LB & CA

Thomas O'Connor & Co. Inc., 238 Main St., Cambridge, Mass., CA Est. $150,000, PLANT ADMINISTRATION BLDG., TEWKSBURY, MASS. Raytheon Mfg. Co., Foundry Ave., Waltham, Mass. Bids Aug. 1. CD 7/25.

J. L. Marshall Sons Inc., 560 York Ave., Pawtucket, R. I., LB $681,685, combined bid, Proj. URI-11-I & UR-11-2, mechanical ENGINEERING and electrical engineering buildings, University of Rhode Island, KINGSTON, R. I. State R. I. &, Prov. Plants, Div. Purchase, State House, Providence, R. I. Bids Aug. 22. CD 7/24.

Frank W. Johnson & Son, 10 Dunn St., East Providence, R. I., LB $399,438, MUNICIPAL bldg., WEST WARWICK, R. I. Town, Municipal Bldg. Comn., Pike St., West Warwick, R. I. Bids Aug. 21. CD 8/6.

Seymour Schwartz, Crompond Rd., Peekskill, N. Y. owner builds, $750,000, 75 HOUSES, Hassake Rd., OLD GREENWICH, CONN.

J. J. Grillo & Co., 499 Farmington Ave., Hartford, Conn., owner builds, $797,500, 55 HOUSES, "Fernwood" Drive, SIMSBURY, CONN.

Carnelli Constr. Co., 54 Cherryfield Dr., West Hartford, Conn., owner builds, $360,000, 3 story, 36 units, 372 x 378 ft., 2 APARTMENTS, Park Rd., WEST HARTFORD, CONN.

Pa., Kennett Square—BA 9/8—Borough, Borough Hall, 550,000 gal. water storage tank, over $44,000. Chester Valley Engineers, Inc., Paoli, Pa., engr. CD 3/8/56.

MIDDLE ATLANTIC

HEAVY CONSTRUCTION—BA

Pa., Phila.—LIGHTING FACILITIES—BA 9/8—Dpt. Procurement, City Hall Annex, Bid No. 6611, field lighting for extended and existing runway 9L-27R and related taxiways, Philadelphia International Airport. CD 12/5/57.

▲ **N. J., North Bergen**—BA 9/17—Twp. of North Bergen, Municipal Bldg., sewage treatment plant addn. and sewers, $4,000,000. Joshua Muss, twp. engr. CD 5/19.

BUILDINGS—BA

▲ **N. J., Haddonfield**—SHOPPING CENTER—BA 9/10—Food Fair Properties, 99 Park Ave., New York, N. Y., 27 store shopping center, 3000 car parking area, $1,500,000. Neff & Evantash, 1520 Locust St., Phila., Pa., archt-engrs.

N. J., Trenton—HOSPITAL—BA 9/12—McKinley Hospital Brunswick Ave., hospital addns. Leonard Busch, 31 N. Willow St., engr., Kramer Hirsch & Carchide, 115 W. State St., archts. CD 10/9.

▲ **N. J., Passaic**—SCHOOL—BA 9/15—City, City Hall, East Side elementary school, $1,070,000. Alfonso Alvarez, 243 Lorraine Ave., Upper Montclair, archt. CD 2/18/57.

† **D. C. Wash.**—TENNIS COURTS—BA 9/17—General Services Administration P. Bldgs. Service, Tennis courts, Washington Hospital Center, U. S. Soldiers Home Grounds. CD 4/11/50, under Pub. bldgs.

Pa., Millersville—BUILDING—BA 10/1—General State Authority, 18th and Herr Sts., Harrisburg, industrial arts building for Millersville State Teachers College $400,000. Plans deposit $10. Gleason & Mulrooney, 1612 Market St., Phila., Pa., archts. A. F. Jones ch engr. c/o owner. CD 3/1/56.

HEAVY CONSTRUCTION—LB & CA

San Marco Constr. Corp., 92 So. Central Ave., Hartsdale, N. Y., LB $197,405 (4 bidders), flood control Asylum Brook, Beacon, NEW YORK. Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Aug. 21. CD 8/20.

Meadow Brook Nurseries and Carmen Green Site Corp., 127 Lafayette Pl., Englewood, N. J., LB $99,025 (6 bidders) Waddington Park and Coles Creek Marina, St. Lawrence Co. Contr. No. 50, Spec. No. PA 5-11044, NEW YORK. Power Authority of State of New York, The Coliseum Tower, 10 Columbus Circle, New York 19, N. Y. Bids Aug. 26. CD 8/14.

Heroes Excavating Contrg. Corp., 35-18 Laurel Hill Blvd., Maspeth, N. Y., LB $423,000 (5 bidders), reconstr. 9th St. Bridge and approaches over Gowanus Canal, Brooklyn Boro, BROOKLYN, N. Y. Dpt. P. Wks., Rm. 1800L, Municipal Bldg., New York, Zone 7, N. Y. Bids Aug. 26. CD 8/6.

Pipe & Engineering Co., 531 Coster St., New York 59, N. Y. LB $121,980 (11 bidders), replacement of underground steamlines, Farm Colony, S. I., Brielle Ave., Richmond Boro, DONGAN HILLS, N. Y. Dpt. P. Wks., Rm. 2200, Municipal Bldg., New York, Zone 7, N. Y. Bids Aug. 20. CD 8/6.

Radory Constr. Corp., Cherry Valley Rd., West Hempstead, N. Y., LB $363,330, storm water drain, grading and paving Natta Blvd., LB $303,890, Franklin St. area, HEMPSTEAD, N. Y. Dir. of Purchasing, Town Hall, Hempstead, N. Y. Bids Aug. 18.

Queens Structure Corp., 32-57 57th St., Woodside, N. Y., LB $659,292 (10 bidders), reconstr. Riverside Dr. viaduct, W. 153 St. to W. 155 St., Contr. 387, Manhattan Boro, NEW YORK, N. Y. President Manhattan Boro, Municipal Bldg., New York, Zone 7, N. Y. Bids Aug. 20. CD 8/15.

Cronin Assocs., Inc., 10 Rockefeller Plaza, New York 20, N. Y., LB $273,700 (11 bidders), heating tunnels, Letchworth Village, THIELLS, N. Y. Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Aug. 21. CD 8/20.

Irvin T. Miller & Co., Burgettstown, Pa., LB $817,088, est. $800,000, Greater Greensburg area flood protection project, Jack's Run, Greensburg, Westmoreland Co., PENNSYLVANIA, Dpt. Forests & Waters, 512 Educ. Bldg., Harrisburg, Pa. Bids Aug. 22. CD 7/30.

Siniawa Excavating Co., Olyphant, Pa., LB $96,586, slope protection, Newfoundland Stream Clearance Project, Wallenpaupack Creek, Dreher Twp. in Wayne Co., Greene Twp. in Pike Co., PENNSYLVANIA. Dpt. Forests & Waters, 512 Educ. Bldg., Harrisburg, Pa. Bids Aug. 22. CD 8/14.

Tony DePaul & Son, 7509 Forrest St., Philadelphia, Pa. LB $294,458. Spring Garden St., TUNNEL, PHILADELPHIA, PA., Phila. Pa. Procurement Dpt., City Hall Annex, Phila. Pa. CD 7/30.

Marino Masse Inc., 4418 N. American St., Phila., Pa., LB $121,803. Bid 2084, sewers, PHILA., PA. Dpt. Procurement, City Hall Annex, Phila., Pa. Bids Aug. 19. CD 8/5.

Peyton Inc., 1117 Wedgewood Rd., Baltimore 29, Md., LB $142,967 (6 bidders), removal existing earth fill, ramps, ramp walls and approach spans, 79 ft. single span steel beam bridge on existing abutment Eastern Ave. underpass, BALTIMORE, MD. Bureau of Hys., 303 Municipal Bldg., Baltimore 2, Md. Bids Aug. 20. Louis Kravetz, br. engr.

Frank P. Dyer, Reisterstown, Md., LB $201,400 (4 bidders), prestressed concrete beam bridge on Washington Blvd. over Gwynns Falls, BALTIMORE, MD. City, Bureau of Hys., 303 Municipal Bldg., Baltimore 2, Md. Bids Aug. 20. CD 8/6.

Alpine Constr. Co., 511 Park Ave., Baltimore 1, Md., LB $97,800 (6 bidders), Contr. 302, storm water Sinclair and Maidens Choice Lane, BALTIMORE, MD. City, Bureau of Sewers, 312 Municipal Bldg., Baltimore 2, Md. John J. Hunt, sewerage engr. CD 1/27/44.

▲ **Myers & Quigg Inc.,** 91 "O" St., S.E., Wash., D. C. CA $1,629,425 radial, paving and widening roadway of Vermont Ave., N.W., from 12th St. to "U" St.; Sherman Ave., from Barry Place to Morton St.; N. H. Ave. from Newton Place to Grant Circle; Fed. Aid Proj. F-19 (4), WASH., D. C. D. C. Govt. Dpt. Hys., 499 Pa. Ave., N. W. CD 7/30.

BUILDINGS—LB & CA

The Ed Powers Co., Allendale, N. J., LB $143,296 (11 bidders), general constr., alterations Power Plant, Rockland State Hospital, ORANGEBURG, N. Y. Dpt. P. Wks., State Office Bldg., Albany, N. Y. Bids Aug. 21. CD 8/20.

A. Dierks & Co., Inc., 159 West St., Brooklyn 22, N. Y., LB $659,670 (11 bidders), heating Rockland State Hospital (Orangeburg, N. Y.).

Goodwin Housing Corp., Chelten Parkway and Kings Hy., Merchantville, N. J., Separate contract, $350,000, RESIDENTIAL DEVELOPMENT, Walnut St., etc., BURLINGTON, N. J., Dante J. D'Anastasio, 1815 Federal St., Camden, N. J., archt.

Heller-Snyder, 511 North Ave., Garwood, N. J., LB $79,796, paving Michigan Ave., Rte. 22 and Kenilworth Ave., Kenilworth, ELIZABETH, N. J., Bd. Freeholders, Union Co., Elizabeth, N. J. CD 6/25.

D. Scatuorchio, 1679 Elizabeth Ave., Rahway, N. J., LB $101,819, (7 bidders), rein.-con. bridge over Maple Ave., Rahway, ELIZABETH, N. J. Bd. Freeholders, Union Co., Elizabeth, N. J. CD 4/2/56.

Folsom Builders, Folsom, N. J., Separate contract, $344,000, RESIDENTIAL DEVELOPMENT, Colton Lane, etc., Buena Vista Twp., FOLSOM (Atlantic P. O.), N. J.

Paul Rochelle, Mount Freedom Rd., Mount Freedom, N. J., Own forces, $350,000, 14 HOUSES, off Franklin St., MORRISTOWN, N. J.

Dante J. D'Anastasio, archt. and owner, 1815 Federal St., Camden, N. J., Separate contract, $350,000, RESIDENTIAL DEVELOPMENT, Essex Dr., etc., PALMYRA, (Burlington P. O.), N. J.

Meredith Paving Corp., Fallsington, Pa., Own forces, $95,000, concrete mixing PLANT, PALMYRA, N. J.

▲ **Nat Spreckman,** 19-13 Fair Lawn Ave., Fair Lawn, N. J., Own forces, $1,500,000, 66 HOUSES, Linwood Ave., RIDGEWOOD, N. J., Leonard G. Feinen, 320 Lincoln Ave., Hasbrouck Heights, N. J., archt.

Leonard Satz & Co., Penn Valley, Pa., Separate contracts, $350,000. RESIDENTIAL DEVELOPMENT, State Rd., etc., BROOMALL, PA. Irwin Stein, Paoli, archt.

James R. Keeler, Harleysville, Pa., Separate contracts, $650,000. 34-unit RESIDENTIAL DEVELOPMENT, ROUTE 63, HARLEYSVILLE, PA.

Savastio Constr. Co., Box 205, Hershey, Pa., CA $613,115, MENS DORMITORY, utilities, Kutztown State Teachers' College, KUTZTOWN, PA. General State Auth., 18th and Herr Sts., Harrisburg, Pa. Bids Aug. 6. CD 8/11, under LB.

Hill & Ivins, 150 N. 2 St., Chambersburg, Pa., LB $619,000 (7 bidders) general contract, Junior-Senior High SCHOOL for Juniata Valley Jt. School Dist. Proj. 714-620, PETERSBURG, PA. Pa. Pub. School Bldg. Auth., 101 S 25 St., Harrisburg, Pa. Bids Aug. 21. CD 7/28.

George Inc., 1231 Vine St., Phila., Pa., CA $100,000. WAREHOUSE ADDN., PHILA., PA. Franklin Research Co., 5134 Lancaster Ave., Phila., Pa. Rosengarten & Kramer, 10 S. 18 St., Phila., archts.

Oak Drive Corp., 1136 Easton Rd., Roslyn, Pa., Separate contracts, $750,000. 30-unit RESIDENTIAL DEVELOPMENT, Oak Hill Dr., etc. ROSLYN, PA. Sherwin Rochlis, 1315 Walnut St., Phila., archt.

Alex Mazzogatti, 203 Deepdale Rd., Strafford, Pa., Separate contracts, $350,000. RESIDENTIAL DEVELOPMENT, Walker Rd., etc. VALLEY FORGE, PA.

E. A. Baker Co., 6480 Sligo Mill Rd., Takoma Park, Md., LB $681,853 (6 bidders), Richard Montgomery HIGH SCHOOL addn., Silver Spring, ROCKVILLE, MD. Montgomery Co. Bd. Educ., Rockville, Md. Bids Aug. 21. CD 8/5.

Dundee, Inc., 234 5th Ave., Wilmington Del., CA $500,000. Holy Rosary Roman Catholic CHURCH, Philadelphia Pike near CLAYMONT, DEL., Thomas M. Donahue 3807 Kirkwood Hy. archt. Bids Aug. 7. CD 7/29.

James Wood, 11 East North Dover, Del., LB $365,100 SCHOOL ADDN., DOVER, DEL., William W. M. Henry Comprehensive High School, Dover, Del., Bids Aug. 13. CD 8/7.

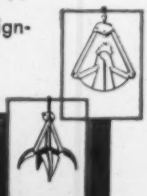
BIGGER PAY LOADS

with aluminum OWEN buckets

The combination of alloy aluminum plate with steel in the bowl construction of material handling buckets . . . 2½ cubic yards and over, eliminates up to 1000 pounds of dead weight. This affords a like amount of increase in pay load when rehandling comparatively light, free-flowing materials.

The exclusive feature of the closing line lead in the center plane of the bucket eliminates sharp bends at the guide sheaves and rollers, thereby increasing the life of the closing cable from 75% to 100%.

Long, internal main-shaft bearings insure permanent jaw alignment with minimum wear. Write for further details.



The OWEN BUCKET Co.
BREAKWATER AVENUE, CLEVELAND 2, OHIO
BRANCHES: New York • Philadelphia • Chicago
Berkeley, Calif. • Fort Lauderdale, Fla.

SOUTH

HEAVY CONSTRUCTION—BA

† **Fla., Jacksonville**—AIR STATION IMPRVS.—BA 9/10—Resident officer in Charge of Constr., Bldg. 902 building 110, reroof West Wing, incl. ventilator, Naval Air Station Jacksonville, Fla., NBy-21119. Spec. 21119/58.

† **Louisiana**—BA 9/10—Office, John Luster, 1120 Williams Ave., Natchitoches, floodwater retarding structure, consisting earthfill embankments and appurtenances on Bayou Dupont Watershed Site 12 located 3 mi. north and 1 mi. east from Fort Jesup, Sabine Parish. Inv. No. 7. Bids July 17, rejected. CD 7/1.

† **La., Alexandria**—WASHRACK—BA 9/11—U. S. Eng., P. O. Box 867, Little Rock, Ark., aircraft washrack, England Air Force Base. ENG-03-050-59-6. $100,000-$500,000. Extended date. CD 8/1.

N. C., Raleigh.—MASONRY BLDG.—BA 10/2—U. S. Eng., 308 Customhouse, Wilmington, N. C., 1 story, 3,850 sq. ft., concrete block masonry bldg., incl. bit. paved drive and hardstand, storm drainage, water line and electrical serv., U. S. Army Reserve Training Center, Raleigh, Wake Co.

BUILDINGS—BA

Fla., Miami—BUILDING—BA 9/10—Florida State Rd. Dpt. Tallahassee, office and laboratory, 3790 NW 21 St. Plans deposit $50 each set. Robert M. Little, 2180 Brickell Ave., Miami, archt.

HEAVY CONSTRUCTION—LB & CA

† **Chicoro Constr. Co., Inc.**, Dunn, N. C., CA $258,165 miscellaneous storm drainage and street imprvmnts. Seymour Johnson Air Force Base, Eng. 31-075-58-39. GOLDSBORO, N. C. U. S. Eng., 308 Customhouse, Wilmington N. C. Bids May 27. CD 4/24.

† **U. S. Eng.**, P. O. Box 905, Charleston, S. C., cancelled bids to have been opened about Sept. 4, runway overrun, Shaw Air Force Base, Eng. 38-081-59-03 SUMTER, S. C. CD 8/18.

Kenneth Fulghorn Constr. Co., 1462, Pensacola, Fla., CA $1,849,168 Impvt. 750 Wherry HOUSING PROJECT units, ELGIN AIR FORCE BASE, FLA., Procurement Officer, Eglin Air Force Base, Valparaiso, Fla. (Corrected price). CD 8/26.

City, City Hall, Huntsville, Ala., rejected bids paving 11 city streets, HUNTSVILLE, ALA., LB $101,096. CD 7/18, under LB.

Mid-States Paving Co., P. O. Box 1454, Meridian, Miss., LB $185,684 (5 bidders), grading, box culverts, base course, surf. road 6.351 mi. between Crystal Springs and Jack, Proj. FAS-No. DS-0311 (1) HAZLEHURST, MISS. Copiah Co. Bd. Supervs., Court House, Hazlehurst, Miss. Bids Aug. 15.

LOUISIANA—State Dpt. Hys., Hy. Office Bldg., Baton Rouge, Bids opened 8/20.

La.—T. L. James & Co., Inc., Box 531, Ruston, La., LB $2,397,940, c. conc. pavement, bit. hot mix on aggreg. type base course for main roadways, 4.898 mi. Avondale Marrero Hy. Rte. LA 3019, SP No. 283-99-04 FAP Nos. F-409 (9) and U-409 (8), CD 8/5; Jefferson Parish; LB $174,686, soil cement base course, bit. hot mix surf. 5.247 mi. parish streets, SP No. 713-05-84, St. Bernard Parish, CD 8/7; LB $734,524 grading, drainage structures, wid'n. existing c. conc. surf. with bit. hot mix 13.034 mi. West Point Ala-Hache Nairn Hy. Rte. 23, SP 62-04-13 and 62-05-14. FASP S-365 (3), Plaquemines Parish; LB $311,219, grading, drainage structures, c. conc. wid'n. existing conc. surf. with hot mix bit. 3.761 mi. St. Francisville-Vains Hy. Ft. 61. SP No. 19-04-22 and 19-05-14, West Feliciana Parish. CD 8/13.

BUILDINGS—LB & CA

Stephens Constr. Co., 501 Monceau Rd., West Palm Beach, Fla., LB $414,400. Riviera Beach High SCHOOL, Riviera Beach, WEST PALM BEACH, FLA., County Bd. Instruc. 301 N. Olive Ave., West Palm Beach, Fla., John Adair Jr., 833 Cherry Rd., West Palm Beach, struc. engr. Wm. S. Workman, 1122 N. Cixie, Lake Worth Fla., mech. engr.

Stuart Constr. Co., Bay Minnette, Ala., LB $363,316. (8 bidders), ELEMENTARY SCHOOL, Morningside Manor Area, MOBILE, ALA. Mobile Co. School Bd., County Courthouse, Mobile, Ala. Dietz & Prince, Van Antwerp Bldg., Mobile, Ala., archts. Bids Aug. 19. CD 8/4.

MIDDLE WEST

HEAVY CONSTRUCTION—BA

† **WISCONSIN**—BA 9/16—Bureau Indian Affairs, Dpt. Interior, 2908 Colfax Ave. South, Minneapolis, Minn.,

Shawano Co.—two 80 ft. 9 in. long composite bridges, Menominee Reservation.

† **Illinois**—BA 9/25—U. S. Eng., 420 Locust St., St. Louis Zone 2, Mo., highway closure structures Wood River Drainage and levee Dist. Item I-J in Madison Co., Civeng. 23-065-59-9. CD 11/9/55.

BUILDINGS—BA

▲ **Wis., Oshkosh**—SCHOOL—Catholic High School, Inc., Oshkosh, BA 9/10—2 story, and bsmnt., 78 x 268 ft.; 1 story, 215 x 213 ft. Paro. High School, 50 x 84 gymnasium, $1,250,000, Foeller, Schober, Berners, Safford & Jahn, 310 Pine St., Green Bay, Wis., archts., CD 6/7.

O., Bowling Green—PHYSICAL SCIENCE BLDG.—BA 9/23—Ohio Dpt. P. Wks., State Depts. Bldg., Columbus, physical science bldg., unit 2, Bowling Green State University, $850,000. Plans deposit $25. Strong, Strong and Strong, 124 South West St., Lima, archts. CD 6/11/57.

HEAVY CONSTRUCTION—LB & CA

Lee Turzillo Contracting Co., 4913 Van Eps, Cleveland, O., CA **$126,460** (3 bidders) pave approaches to Mill St. viaduct, 44 ft. 4 lane thoroughfare from Summit St. to Forge St., AKRON, O. City of Akron, City Hall, Akron, O. Bids Aug. 5. CD 7/30.

Trimmer Constr. Co., Inc., 344 North Hague Ave., Columbus, Zone 4, O., LB **$72,875**, site imprv. for office and classroom bldg., College of Agriculture, Ohio State University, COLUMBUS, O. Ohio Dpt. P. Wks., State Dpt. Bldg., Columbus, O. Bids Aug. 11. CD 7/23.

▲ **Geo. Tripp, Inc.** and **Boam Co.** (joint venture) 3260 Elizabeth Lake Rd., Pontiac, Mich., CA **$1,130,769**, est. $1,260,000 (3 bidders) water distribution sys., LAKEVILLE, O. Village of Lakeville, Village Hall, Lakeville, O. Bids July 8. CD 6/24.

Jechura Bros., Inc., 5700 Telegraph Rd., Toledo, O., LB **$379,155**, est. $300,000 (1 bidder) small boat MARINA in Cullen Park, incl. 3,035 ft. dike, dredging 60 ft. channel, 2 ramps, parking area, TOLEDO, O. Toledo Metropolitan Plan Bd., Courthouse, Toledo, O. Bids Aug. 19. CD 8/13.

▲ **Great Lakes Dredge & Dock Co.**, 9320 Ewing St., Chicago, Ill., CA Est. **$3,000,000**, enlargement of harbor, Gary Steel Works, GARY, IND. United States Steel Corp., Gary Works, Broadway and River, Gary, Ind. CD 3/19/56, under Industrial Buildings.

▲ **ILLINOIS**—Dpt. P. Wks. & Bldgs., Div. Hys., Centennial Bldg., Springfield,

Ill.—**Rockford Black Top Constr. Co.**, 1615 Westchester Ave., Rockford, Ill., LB **$91,871** (1 bidder) 3.24 mi. bit. conc. surf. SB 1-Rte. 2 southwest of Rockford, northerly, LB **$84,856**, (1 bidder) Winnibago Co.; 2.84 mi. conc. surf. course from U.S. 20 west of Rockford, southerly, Winnibago Co.; LB **$118,434** (1 bidder) 4.12 mi. conc. surf. course from Winnibago easterly, Winnibago Co.; LB **$288,000** (1 bidder) combination bid on 3 projects

Ill.—**Gilmore Asphalt Co.**, Anna, Ill., LB **$127,745** (1 bidder) 2.31 mi. widen and resurf. on Ill. 3 between Wolf Lane and Ware, Union Co.; LB **$616,512** (2 bidders) resurf., widening and embankment on Ill. 3 and 146 north of Reynoldsville, Alexander and Union Counties.

Ill.—**Princeville Stone Co.** and **Hampton Bridge Co.**, Princeville, Ill., LB **$107,859** (2 bidders) 0.92 mi. surf. course and 3 span steel bridge over Bear Creek on FAS 428 east of Elderville, Hancoca Co.; Princeville Stone Co., Princeville, Ill., LB **$139,320** (8 bidders) 3.14 mi. surf. treat. from Ill. 99 south of Camden easterly, Schuyler Co.

Ill.—**Caldwell Eng. Co.**, Jacksonville, Ill., LB **$217,991** (2 bidders) 2.18 mi. bit. surf. from U.S. 67 north of Athensville, Greene Co.

Ill.—**Beecher Williams Co.**, Harrisburg, Ill., LB **$87,342** (6 bidders) 3.03 mi. surf. treat. from Ill. 146 northwest of Grantsburg, southerly, Johnson Co.

Ill.—**Henry County Constr. Co.**, Cambridge, Ill., LB **$138,939** (3 bidders) 5.53 mi. bit. surf. treat. from Osceola easterly, Stark Co.

Ill.—**Sankey Bros., Inc.**, 942 Illinois Bldg., Springfield, Ill., LB **$113,636** (2 bidders) 3.41 mi. bit. surf. treat. from U.S. 67 east of Beardstown, southeasterly, Cass Co.

Ill.—**Calhoun County Contr. Corp.**, P.O. Box 201, Springfield, Ill., LB **$162,880** (1 bidder) resurf. on Main St. (Ill. 34) in Rosiclare, Hardin Co.

Ill.—**McCarthy Imprv. Co.**, Kahl Bldg., Davenport, Iowa, LB **$99,638** (2 bidders) 2.35 mi. soil cement base course on Ill. 92, Henry Co.

Ill.—**D. E. Lynch Constr. Co.**, 118 E. Walnut St., Watseka, Ill., LB **$98,334** (1 bidder) 5.16 mi. surf. course from Ill. 49 south of Woodford, easterly, Iroquois Co.

Ill.—**Rock Road Constr. Co.**, 5915 Rodgers Ave., Chicago, Ill., LB **$558,270** (4 bidders) 11.15 mi. widening and resurf. on Ill. 80 between Hanover and Savanna, JoDaviess and Carroll Counties.

Ill.—**Triangle Constr. Co.**, 480 N. Evergreen, Kankakee, Ill., LB **$90,025** (2 bidders) 3.89 mi. bit. surf. from U.S. 54 at Indian Oaks, easterly, Kankakee Co.

Ill.—**Johnston Roadbuilders, Inc.**, 1 South Easton Ave., Joliet, Ill., LB **$406,940** (2 bidders) 9.33 mi. base course widening and resurf. on Ill. 140 from Alhambra to Old Ripley, Madison and Bond Counties.

Ill.—**Swords & Dietz**, 107 South Jefferson, Peoria, Ill., LB **$144,926** (2 bidders) 1.17 mi. bit. surf. on Airport Rd. south of Bellevue, Peoria Co.

Ill.—**Hollembeak Constr. Co.**, 726 South 22 St., Quincy, Ill., LB **$113,464** (1 bidder) base course and resurf. on Quincy St. (Ill. 107) in Griggsville, Pike Co.

Ill.—**Bituminous Fuel and Oil Co.**, 304 Illinois Ave., East St. Louis, LB **$353,994** (2 bidders) 3.66 mi. resurf. on Missouri Ave. (U.S. 460) between Ill. 163 and 13, St. Clair Co.

Ill.—**Sangamo Constr. Co.**, 700 N. MacArthur, Springfield, Ill., LB **$189,451** (2 bidders) 7.13 mi. bit. surf. treat on FAS 575 north of Petersburg, Menard Co. Bids opened Aug. 21. CD 8/11.

ILLINOIS—Dpt. P. Wks. & Bldgs., Div. of Hys., Centennial Bldg., Springfield,

Ill.—**Herihy Mid Continent Co.**, 135 So. LaSalle, Chicago, Ill. CA **$850,038**, three 3 span grade separation structures N.W. Expressway over Dwersey Ave., Chicago, Cook Co.; CA **$511,042**, 4 span WF beam grade separation Oak Park Ave. over Congress St. Expressway and railroad, Cook Co. Awarded Aug. 15.

Ill.—**M. J. McDermott Co.**, 30 North LaSalle, Chicago, Ill., CA **$792,828**, 3 span deck girder grade separation structure N.W. Expressway over Fullerton Ave., Chicago, Cook Co. Awarded Aug. 15. Bids opened July 29. Grand total $2,153,908. CD 8/1, under LB.

▲ **ILLINOIS**—State Div. Hys., Centennial Bldg., Springfield,

Ill.—**Triangle Constr. Co.**, 480 No. Evergreen, Kankakee, Ill., CA **$538,485**, 8.06 mi. widen and resurf. U. S. 45 southwest New Burnside, Johnson Co. Awarded Aug. 15.

Ill.—**S. J. Groves and Sons Co.**, 1104 W. Reynolds, Springfield, Ill., CA **$3,120,020**, paving south of Bellesville on FA 14 and Ill. 158 and on U. S. 460 and ramps, etc., St. Clair Co. Awarded Aug. 21.

Ill.—**Standard Paving Co.**, 308 W. Washington, Chicago, Ill., CA **$2,094,057**, 5.78 mi. paving on FA 1-5 near St. Joseph, Champaign and Vermillion Counties. Awarded Aug. 15.

Ill.—**Jansen and Schaefer**, 1600 Broadway, Pekin, Ill., CA **$977,373**, 1.54 mi. paving and 3 interchanges on FA 1-5 in East Peoria, Tazewell Co. Bids opened July 29. Grand total $4,845,335. CD 8/12, under LB.

† **Lathrop Constr. Co.**, Box 309, 305 E. Grand Blvd., East Lansing, Mich., LB **$349,000**, AIRMEN'S DINING HALL, Kinross Air Force Base, ENG-20-064-59-6, KINROSS, MICH. U. S. Eng., 1101 Washington Blvd., Detroit, Mich. Bids Aug. 22. CD 8/12.

BUILDINGS—LB & CA

Earl Betsch, 7230 Clovernook Ave., Mt. Healthy, O. Own forces **$450,000**, 13, 2 story bsmnt. brick APARTMENT BLDGS., Allat Dr., CINCINNATI, O. Jos. Allen, 5555 Glenway Ave., Cincinnati, O., engrs.

Barrington Bldg. Co., 1783 Wrenford Rd., Cleveland, Zone 21, O. Own forces **$378,000**, 21 HOMES, W. 94 and W. 96 Sts., off Pearl, PARMA, O.

Pfeifer Constr. Co., 617 S. 94 St., Milwaukee, Wis., LB **$180,000** (9 bidders) STORAGE bldg., MILWAUKEE, WIS. Bd. School Directors, 1111 N. 10 St., Milwaukee, Wis. Bids Aug. 21. CD 8/12.

Paul H. Johnson, 19600 W. McNichols, Detroit 19, Mich., CA **$379,034**, Contr. LC-17, BINDERY and SHOPS BLDG., Third Ave. and Edsel Ford Expressway for Detroit Library Comm., DETROIT, MICH. City, 528 City-County Bldg., Detroit, Zone 26, Mich. Bids Aug. 5. CD 7/21.

WEST OF MISSISSIPPI

HEAVY CONSTRUCTION—BA

Minn., Bloomington (P.O. Minneapolis)—BA 9/12—Village, concrete curb, gutter streets, $150,000; bit. surf. streets involving about 195,178 sq. yds., $200,000. F. Laska, village engr.

Minn., Mahnomen — BA 9/16 — Mahnomen Co., grade, sand, grav., sub-base, grav. base, road mixed bit. surf. 3.7 mi. between CSAH 10, 2 mi. south and 1 mi. west and west line, SP 44-603-02 (CSAH 5), Minn. Proj. S 6603 (10), plans deposit 70c; grading 2.2 mi. between 7.75 mi. east of Bejou and CSAH 3, SP 44-604-02 (CSAH 1), Minn. Proj. DS 6605(7), plans deposit $1.10. $73,000. N. C. Peterson, co. hy. engr.

Minn., Warren—BA 9/16—Marshall Co., sand-grav., subbase, grav. base, road-mixed bit. base and road-mixed bit. surf. 3 mi. between T. H. 220, 10.8 mi. west Stephen and 3 mi. east. SP 45-605-02 (CSAH 5), Minn. Proj. DS 6636(2); 7.8 mi. between 3 mi. east T. H. 220 and T. H. 75 at Stephen. SP 45-605-03 (CSAH 5), Minn. Proj. S 6636(3). Plans deposit 50c. H. I. Knutson, co. hy. engr. CD 8/22.

† **Texas**—BA 9/17—MISSILE FACILITIES—U. S. Eng., 100 W. Vickery Blvd., Fort Worth 4, Tex. Nike Hercules facilities, Avlarado, Denton, Mineral Wells and Terrell Sites, Dallas-Fort Worth Defense Area, ENG-41-443-59-5. Extended date. CD 8/7.

Minn., Worthington—BA 9/18—Nobles Co., grav. base, road mixed bit. surf. 3 mi. between T. H. 59 and CSAH 3, 2.5 mi. west of Brewster. SP 53-604-01 (CSAH 14), Minn. Proj. DS 6020 (1); 3 mi. between CSAH 3, 2.5 mi. west of Brewster and CSAH 1 at Brewster. SP 53-604-02 (CSAH 14), Minn. Proj. S 6020 (2) $80,000. Plans deposit 50c. G. W. Dale, co. hy. engr.

† **Tex., Austin**—FACILITIES—BA 9/18—U. S. Eng., Santa Fe Bldg., Galveston, Tex., IL.S. and tacan facilities, Bergstrom Air Force Base, Inv. ENG-41-443-59-7. CD 9/17/57.

† **Tex., Lubbock**—RUNWAY PRIMARY—BA 9/23—U. S. Eng., Box 1600, Fort Worth, runway, Reese Air Force Base, Inv. No. ENG.-41-443-59-8. $250,000. CD 8/15.

† **Oklahoma**—BA 9/24—U. S. Eng., Box 61, Tulsa, Zone 2, water supply sys. for project bldgs., Eufala Dam, CIVENG.-34-066-59-7. $45,000. CD 9/5.

BUILDINGS—BA

Minn., Austin—SCHOOL—BA 9/10—Bd. Educ., 1 story Southwest elementary school. $450,000. Plans deposit $25. Hammel & Green, 1932½ University Ave., St. Paul, Minn., archts. CD 5/21/56.

† **Tex., Marshall**—TRAINING CENTER—BA 9/10—U. S. Eng., Box 867, Little Rock, Ark., U. S. Army Reserve Training Center, $100,000-$500,000. CD 8/26.

Tex., San Marcos—SCHOOL—BA 9/11—San Marcos Ind. School Dist., high school, $450,000. Plans deposit $50. Page, Southerland & Page, 602 West Ave., Austin, archts. CD 4/25/58.

Minn., Minneapolis—RESEARCH CENTER—BA 9/16—Regents of the University of Minnesota, 404 Administration Bldg., Minneapolis 14, Veterans of Foreign Wars cancer research center on main campus. $375,000. Plans deposit $25. Ellerbe & Co., E. 505 First National Bank Bldg., St. Paul, Minn., archts. CD 6/12.

HEAVY CONSTRUCTION—LB & CA

Orfei & Mariani, 1156 Homer St., St. Paul, Minn., LB **$424,628** (9 bidders), furnish and install 16,500 lin. ft. 24 to 42-in. sanitary sewer, etc. ROSEVILLE (P. O. St. Paul), MINN. Village, Roseville, Minn. Bids Aug. 22. CD 8/8.

A. E. Benike, 330 Third Ave. N. W., Rochester, Minn., CA **$139,700** (4 bidders), SWIMMING POOL, bathhouse, etc., ROCHESTER, MINN. City, Bd. Parks Comrs., Rochester, Minn. Bids Aug. 13. CD 7/23.

Barton Contracting Co., Osseo, Minn., LB **$75,202** (4 bidders), bit. surf. Reservoir Blvd. between Central Ave. and 44th Ave. northeast, COLUMBIA HEIGHTS, MINN. City, Columbia Heights, Minn. Bids Aug. 18.

† **Eugene Luhr & Co.**, Box 48, Columbia, Ill., LB **$162,740**, est. $227,630 (9 bidders), Pilot Canal excavation, Missouri River, Sioux City to Omaha at Lower Dokota Omadi Bends, vicinity of Sergeant Bluff, CIVENG-25-066-59-8. IOWA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Aug. 21. CD 8/1.

† **Wilbur Nielson Co.**, 1531 North Saddle Creek Road, Omaha, Neb., LB **$532,970**, levees and channel alterations unit II, section 1, Little Sioux River, near Turin, ENG-25-066-59-2, IOWA. U. S. Eng., 1709 Jackson St., Omaha 2, Neb. Bids Aug. 14. CD 7/22.

S. R. Brunn Constr. Co., 206 Rainbow Blvd., Kansas City, Mo., LB **$77,600** (4 bidders), WW imprvts. dam and intake, MARYVILLE, MO. City, City Hall, Maryville, Mo. Bids Aug. 4. CD 7/10, under LB.

† **Ford Constr. Co.**, Dyersburg, Tenn., CA **$197,045**. levee and roadway embankment and channel excav. Item No. 8, Madison to Marianna Levee and floodway in St. Francis Levee Dist. of Arkansas near Marianna, Lee Co., ENG 40-041-59-8, ARKANSAS. U. S. Eng., P. O. Box 97, Memphis 1, Tenn. Bids Aug. 13. CD 7/24.

† **SOUTH DAKOTA**—Bureau P. Rds., Dpt. Commerce, Denver Federal Center, Denver, Colo.,

Husman Brothers Inc., Box 898, Sheridan, Wyo., CA **$154,164** Forest Hy. Proj. 8-C, Rapid City Pacoola, 1.672 mi., Pennington Co. Bids Aug. 14. CD 8/5.

KANSAS—State Hy. Comm., Salina, Bids opened 8/21, **Brown & Brown, Inc.**, 645 East Crawford, Salina, Kan., LB **$226,506** (5 bidders), grading, b. conc. 1.103 mi. from Crawford St. to Ash St. on Salina US-81 bypass. SP 81-85-DU 043-2(8), Saline Co. CD 8/6.

† **E. B. Bush Constr. Co., Inc.**, P. O. Box 5128 Farley Sta., Oklahoma City, Okla., LB **$308,893** (4 bidders), consolidated aircraf: MAINTENANCE SHOP, Clinton-Sherman Air Force Base, NBy-19784, Spec. 19784/58, CLINTON, OKLA. Officer in Charge of Constr., Eighth Naval Dist., Bldg. 16. U. S. Naval Station, New Orleans (Algiers) La. Bids Aug. 19. CD 7/25.

Stanford Constr. Co., Box 11307, Ft. Worth, Tex., LB **$141,901**, off site utilities for 230 unit armed service HOUSING Proj., IFB 34-600-59-1, ENID, OKLA. U. S. Govt. Base Contracting Office, Vance Air Force Base, Enid, Okla. Bids Aug. 5. CD 7/23.

Pittsburgh-Des Moines, 1215 Praetorian Bldg., Dallas, Tex., CA **$56,800**, 1½ mg. steel water tank and foundations, LINDSAY, OKLA. City of Lindsay, City Hall, Lindsay, Okla. Bids Aug. 4. CD 7/23.

▲ **Hoffman & Borders**, Waco, Tex., LB **$786,600**, Southcliff Reservoir, water coming from Iron Bridge Reservoir of Sabine River, DALLAS, TEX. City, City Hall, Dallas, Tex. Bids Aug. 18. CD 9/4/56.

Sira & Payne & Whittle Contrg. Co., 4007 Irving Blvd., Dallas, Tex., LB **$853,182**, removal of excavating materials, (Dallas, Tex.).

Ward R. Grimshaw, Box 1415, Odessa, Tex., CA **$557,696**, 2 story AIR TERMINAL, MIDLAND, TEX. City, City Hall, Midland, Tex. Bids June 24. CD 7/15, under LB.

Judson Phelps, 5600 Vance-Jackson Rd., San Antonio, Tex., CA **$78,000**, area and AUTO PARKING CENTER, Fredericksburg Rd. & Loop 13, SAN ANTONIO, TEX. Community Realty Co., 3022 E. Houston St. (for Handy-Andy Chain Stores), San Antonio, Tex. CD 8/22/58.

BUILDINGS—LB & CA

▲ **C. H. Peterson Constr. Co.**, 4020 Minnetonka Blvd., Minneapolis, Minn., CA **$1,667,900** (6 bidders) general constr., 2 story, 185 x 190 ft. JUNIOR HIGH SCHOOL, Ninetieth St. and Portland Ave., BLOOMINGTON (P. O. Minneapolis), MINN. Bd. Educ., Bloomington, Minn. Bids Aug. 21. CD 8/6.

H. S. Horwitz & Co., Inc., 318 South 3rd St., Minneapolis, Minn., LB **$379,800** (6 bidders), plumbing and heating Junior High School (Bloomington, Minn.).

Adolfson & Peterson, 2817 Bryant Ave. S., Minneapolis, Minn., LB **$273,800** (11 bidders), 1 story, 60,000 sq. ft. slab on grade WAREHOUSE and OFFICE, 4680 Olson Hy., GOLDEN VALLEY (P. O. Minneapolis), MINN. Paper Supply Co., 240 Portland Ave., Minneapolis, Minn. Bids Aug. 20. CD 8/20.

Rolph Constr. Co., Luverne, Minn., LB **$206,700**, general constr. LAUNDRY BLDG. at St. Peter State Hospital, ST. PETER, MINN. State Dpt. Admin., 19 State Capitol, St. Paul, Minn. Bids Aug. 22. CD 7/24.

T. J. Molzahn & Sons, Inc., P. O. Box 599, LaCrosse, Wis., CA **$433,181** general constr. SCHOOL addn. incl. sewage disposal plant WYKOFF, MINN. Bd. Educ., Wykoff, Minn. Bids July 22. CD 7/9.

W. A. Klinger Constr. Co., 2015 7 St., Sioux City, Iowa, CA est. **$250,000**, GRAIN STORAGE FACILITIES, incl. seventeen 120 ft. high, 407,000 bushel capacity, cylindrical concrete units, SIOUX CITY, IOWA, Farmers Union Grain Terminal Assocs., 14 and Smith River Rd., Sioux City, Iowa.

Weeks Constr. Co., 1814 Harrison, Kansas City, Mo., LB **$379,590** Est. $400,000, (8 bidders), 1 story, 146 x 167 ft. rein.-con., concrete blocks Wm. Chrisman HIGH SCHOOL addn., INDEPENDENCE, MO. Bd. Educ., Independence, Mo. Marshall & Brown, 1016 Baltimore, Kansas City, Mo., archts. Bids Aug. 12. CD 2/6.

▲ **J. E. Dunn Constr. Co.**, 929 Holmes St., Kansas City, Mo., LB **$2,799,966**, Pennway Plaza Housing Proj. 250 units in 42 bldgs., 2 story constr., face brick, concrete block, precast concrete, KANSAS CITY, MO. Kansas City Housing Auth., 1220 Independence Ave., Kansas City, Mo. Bids Aug. 12. CD 7/22.

Arkansas Glass Container Corp., Jonesboro, Ark., Owner Builds, Est. **$175,000**, 1 story 80 x 220 ft. WAREHOUSE, JONESBORO, ARK.

▲ **Delta Engr. Corp.**, Box 13256, Houston, Tex., CA Est. **$3,000,000** Columbia Products extraction PLANT to process propane, butane and other natural gas products, etc., MAGNOLIA, ARK. Arkansas Louisiana Chemical Corp., 300 W. Capitol St., Little Rock, Ark. CD 11/27.

Sampson Constr. Co., 1801 S. 9th St., Hutchinson, Kan., CA Est. **$90,000**, 254,000 bushel capacity GRAIN STORAGE ELEVATOR, OBERLIN, KAN. Decatur Cooperative Elevator Co., Oberlin, Kan.

H. A. Lott, Inc., Box 2505, Houston, Tex., CA **$807,900**, CHEMISTRY-PHYSICS, HUNTSVILLE, TEX., Sam Houston State Teachers College, Huntsville, Tex., Bids Aug. 5. CD 8/20, under LB.

Southwestern Constr. Co., Box 1204, Houston, Tex., CA Est. **$450,000**. LIBRARY and science HOUSTON, TEX. St. John's School, 2401 Claremont Lane, Houston, Tex. CD 7/30.

Jameson Constr. Co., Box 626, Longview, Tex., CA **$95,000** FACTORY. LONGVIEW, TEX., Ben Cook & Tom Davidson, Box 31 St., Charles, Mo. and Box 149, Longview, Tex. CD 8/27.

† **A & B Constr. Co.**, Box 554, Helena, Mont. CA **$123,115** (4 bidders) ASSEMBLY WING ADDN. and Maintenance shop, ARTC. HELENA, MONT., U. S. Engr. City-County Airport, Walla Walla, Wash. P. H. Symbol, owner. Bids Aug. 19. CD 8/11.

Mellwin Constr., 35 Fox Denver, Colo., LB **$891,000** North High SCHOOL addns. DENVER, COLO., School Dist. No. 1, 414 St. Denver, Colo. CD 4/30.

FAR WEST

HEAVY CONSTRUCTION—BA

IDAHO—BA 9/16—State Hy. Dpt., Boise,
Minidoka Co.—constr. roadway and road mix bit. surf. on 1.184 mi. Camp Road. Plans deposit $5. CD 3/7.

† **Ore., Corvallis**—HOUSING FACILITIES—BA 9/16—337th Fighter Group, Portland International Airport, water, sewage and electrical facilities, Camp Adair Air Force Base, housing proj.

† **Oregon**—BA 9/23—U. S. Eng., 628 Pittock Block, Portland, drilling, casing, sealing, developing and testing a water well on the Oregon shore at The Dalles Dam Site, CIVENG-35-026-59-40. CD 9/17/56.

▲ **CALIFORNIA**—BA 9/24—State Div. Hys., 1120 N St., Sacramento,
Fresno and Madera Counties—4-lane freeway 7.7 mi. on U.S. Hy. 99 from 0.4 mi. south of Clinton Ave. to just north of Herndon, incl. 7 structures, est. $4,120,000.
Santa Barbara Co.—grading, paving 2.5 mi. freeway on U.S. Hy. 101, incl. ramps, frontage roads and several structures, between Ortega Hill and Salsipuedes Overhead in Santa Barbara, est. $1,340,000. CD 10/25/56.

▲ **CALIFORNIA**—BA 10/2—State Div. Hys., 120 S. Spring St., Los Angeles,
Los Angeles Co.—grading, paving and structures 2.3 mi. San Diego Freeway in Los Angeles and Culver City from Venice Blvd. to Jefferson Blvd., est. $6,500,000. CD 10/25/56.

BUILDINGS—BA

† **Washington**—HOUSES, etc.—BA 9/9—National Park Service, Dpt. Interior, Box 337, Coulee Dam, two 1 story, 3-bedroom houses and comfort station, Coulee Dam National Recreation Area, Proj. CD-W 193.

Idaho, Gooding—ARMORY—BA 9/10—Comm. P. Wks., Capitol Bldg., Boise, armory for Dpt. Army, Idaho National Guard, Boise.

Wash., Lacey—SCHOOL—BA 9/10—School Dist. No. 3, 5 frame bldgs. totaling 35,500 sq. ft. elementary school, $400,000. Plans deposit $40. Extended date. W. A. Hohnson & Assocs., 3506 Broadway, Everett, archts. CD 8/18.

▲ **Wash., Colfax**—SCHOOL—BA 9/16—School Dist. 300, 2 story, 89,000 sq. ft. high school, $1,000,000. G. M. Rasque & Son, Wash. Trust Bldg., Spokane, archts. CD 5/5.

HEAVY CONSTRUCTION—LB & CA

WASHINGTON—State Hy. Comn., Ernest J. Ketcham, chn., Dpt. Hys., Olympia, rejected bids Aug. 19.
Lewis Co.—clearing, draining, grading, surf., constr. bit. surf. treatment and cement-treated base, b. conc. paving, installing traffic signs and illumination on 2.282 mi. State Hys. 1 and 5-K, Secondary State Hy. 5-K interchange and jct. Primary State Hy. 1 to Klaus. CD 8/25, under LB.

WASHINGTON—State Hy. Comn., Ernest J. Ketcham, chn., Dpt. Hys., Olympia,
Woodworth & Co., 1200 E. D St., Tacoma, Wash., CA. **$287,169**, clearing, draining, grading, surf., constr. bit. surf. treatment and cement-treated base, b. conc. paving, rein.-conc. bridge, fencing and installing traffic signs on 0.795 mi. Secondary St. Hy. 5-G, from jct. with Primary St. Hy. 1 to Ainsworth Ave., Pierce Co. Bids Aug. 19 (error found in low bid). CD 8/25, under LB.

L. W. Vail Co., Box 847, Pasco, Wash., LB **$84,075** (8 bidders), grading, curbs and surf. on city streets, GRANDVIEW, WASH. City, City Hall, Grandview, Wash.

† **OREGON**—Bureau of Pub. Rds., Morgan Bldg., Portland,
Morse Bros., Box 266, Lebanon, Ore., CA **$340,583**, est. $420,714 (4 bidders) surf. 5.488 mi. and bit. pave. 9.382 mi. of Umpqua Hy., Douglas Co. Bids Aug. 19 Awarded Aug. 21. CD 3/15/57.
Troxell & Brassfield Co., 4006 E. 38 St., Seattle, Wash., LB **$466,944**, est. $684,000 (5 bidders) removing and dispose of rock pinnacles, Bonneville Dam Pool, Columbia River, CIVENG-35-026-59-13. OREGON. U. S. Eng., Pittock Block, Portland, Ore. Bids Aug. 20. CD 7/18.
Dravo Corp., Neville Island, Pittsburgh, Pa., CA **$909,500**, bulk grain LOADING TOWER, Terminal No. 4, PORTLAND, ORE. Portland Dock Comn., 3070 N.W. Front St., Portland, Ore. Awarded Aug. 20. CD 5/26/54.

† **CALIFORNIA**—Bureau P. Rds., Dpt. Commerce, Old Mint Bldg., 5 and Mission Sts., San Francisco,
Welker & Peterson Co., 44269 Date Ave., Lancaster, Calif., LB **$434,072** (6 bidders) grading, excavation, related work, Rte. 90 near Johnsondale, Sequoia National Forest, Tulare Co.
California Olympic Comn., 333 Market St., San Francisco, rejected bids (1) JUDGES' TOWER (2) PRESS TOWER, at Olympic Games site, Squaw Valley, CALIFORNIA. Corlett & Spackman, AIA, and Kitchen & Hunt, AIA, 347 Clay St., San Francisco, archts. CD 7/28/58, under LB.
Colich Constr. Co., 8320 Isis Ave., Los Angeles, Calif. CA **$628,242** (8 bidders) Pacific Coast Hy. and Western Ave. storm drain, Proj. 77, LOS ANGELES. CALIF. Los Angeles Co. Flood Control Dist., 2250 Alcazar St., Los Angeles, Calif. Bids Aug. 8, awarded Aug. 19. CD 8/18, under LB.
Frank G. Furman, 4210 4th Ave., San Bernardino, Calif. LB **$119,249**. Linden Ave. basin and appurtenance works, SAN BERNARDINO, CALIF., Co. of San Bernardino, 316 Mountain Ave., San Bernardino, Calif. Bids Aug. 14.
Overton & Clark Constr. Equipment Co., 6029 Fairmount Extension, San Diego 20, Calif. CA **$114,395**. site development at Robert Fulton elem. school; earthwork, storm drain, sewers, gas water mains, SAN DIEGO, CALIF. San Diego Unif. School Dist., 4100 Normal St., San Diego, Calif. Bids July 31.
Williams & Burrows, 500 Harbor Blvd., Belmont, Calif., LB **$421,400**, 4-bay hangar addn. incl. 3 aircraft parking area, employee parking area, San Francisco International Airport, South San Francisco SAN FRANCISCO, CALIF. American Airlines Inc., Admin. Office, San Francisco International Airport, South San Francisco, Calif. John Carl Warnecke, 111 New Montgomery St., San Francisco, Calif., archt. John A. Blume & Assoc., 45-2 St., San Francisco, Calif., engr. CD 11/29/56.
A. G. Raisch Co., P. O. Box 458, San Rafael, Calif., LB **$123,269** (5 bidders) curbs, gutters, storm drains, manholes, etc. subdivision imprvs., Marin Golf and Country Club Estates No. 1, near here, SAN RAFAEL, CALIF. Trousdale Constr. Co., c/o Wilsey & Ham, engrs., 10 Vivian Way, San Rafael, Calif.

BUILDINGS—LB & CA

Vandivort Constr. Co., Box 1647, McKittrick St., Wenatchee, Wash., CA est. **$452,000**, remodel CLUB bldg., WENATCHEE, WASH. Benevolent & Protective Order of Elks, Wenatchee, Wash.
United Constr. Co., 3839 Riverside Blvd., Sacramento, Calif., CA **$505,933**. Part II, Highlands High SCHOOL, North Highlands, DEL PASO HEIGHTS, CALIF. Grant Union High School Dist., 1400 Grand Ave., Del Paso Heights, Calif. Bids Aug. 6. CD 8/20, under LB.
Robert Miller Co., 4514 Don Milagro, Los Angeles, Calif., LB **$475,000**, 32-bed masonry constr. HOSPITAL, FAIRFIELD, CALIF. Central Solano Hospital Foundation, c/o President, 740 Texas St., Fairfield, Calif. Harry Hiller & Assocs., 2808 Temple, Los Angeles, Calif., lessee. White, Hermann & Steinar, 680 Beard St., San Francisco, Calif., archts. Robinson & Giddings, 80 Stonestown, San Francisco, Calif., engrs. CD 3/13.

† **Ralph Larson & Sons**, 64 South Park, San Francisco, Calif., LB **$859,000** (14 bidders) 1 story, 60,800 sq. ft. reinforced concrete, structural steel, Metalurgy LABORATORY, near here, LIVERMORE, CALIF. U. S. Atomic Energy Comn., c/o Dir., 518-17th St., Oakland, Calif. CD 7/7.

† **Garry Grover Inc.**, 3511 Mt. Diablo Blvd., Lafayette, Calif. CA **$543,194**. family HOUSING, IFB 58-134, Point Arena Air Force Station, POINT ARENA, CALIF. Base Procurement Officer, Bldg. 1103, Hamilton Air Force Base, Calif. CD 5/28, under LB.

See a participating

BLUE BRUTE DISTRIBUTOR

for more details about the Guaranteed Availability Plan

ALABAMA
Salmon & Co., Birmingham

ARIZONA
Junction Bit & Tool Co.
Phoenix

CALIFORNIA
Humboldt Machine Works, Arcata
Essick Machinery Co., Los Angeles
L. E. McDowell Co., Richmond
Western Traction Co., San Francisco

COLORADO
Power Rental Equipment, Inc.
Denver

CONNECTICUT
Construction Equipment Co., Hartford

FLORIDA
A. W. Thomas Construction Machinery, Inc.
North Miami
Highway Equipment & Supply Co.
Orlando

GEORGIA
Tractor & Machinery Co., Inc.
Atlanta, Macon

ILLINOIS
Baker Equipment Co., Chicago

KANSAS
The Hutchinson Foundry & Steel Co.
Hutchinson

LOUISIANA
The "K" Way Equipment Co.
Baton Rouge

MARYLAND
Elphinstone, Inc.
Baltimore, Washington
Free State Equipment Co., Inc.
Baltimore, Berwyn

MASSACHUSETTS
Morrissey Bros. Tractor Co., Burlington

MICHIGAN
Great Lakes Equipment Co.
Muskegon
J. R. Panelli Equipment Co.
Detroit

MINNESOTA
Minneapolis Equipment Co.
Minneapolis

MISSOURI
Machinery & Supplies Co., Kansas City
Hennessey-Forrestal Machinery Co., St. Louis

NEBRASKA
Nebraska Tractor and Equipment Co., Omaha

NEVADA
Sanford Tractor and Equipment Co., Reno

NEW JERSEY
Miller Equipment Co.
Dunellen
American Air Compressor Corp., North Bergen

NEW YORK
Heil Equipment Co. of New York, Inc.
Astoria
Murray Construction Equipment Corp.
Buffalo, Rochester

NORTH CAROLINA
Spartan Equipment Co.
Charlotte

OHIO
Beasley-Holmes Co., Toledo

OREGON
Western Equipment Co.
Eugene, Portland

PENNSYLVANIA
American Equipment Corp.
Mechanicsburg
The Fred Greenley Machinery Co.
Forty Fort
Metalweld, Inc.
Philadelphia

RHODE ISLAND
B.M.G. Equipment Co., Providence

TENNESSEE
Carey Equipment Co.
Memphis

TEXAS
Big Three Welding Supply
Forth Worth, Dallas, El Paso, Odessa, Longview, Lubbock, Borger, Farmington, Albuquerque (N. M.)

WEST VIRGINIA
Construction Equipment Inc., Charleston

Give your Blue Brute a breather...

BORROW AN AIR TOOL FREE FROM YOUR DISTRIBUTOR UNDER THE GUARANTEED AVAILABILITY PLAN

Worthington Blue Brute tools are gluttons for punishment. Check. But even a Blue Brute needs an occasional check-up. That's when you'll appreciate the new Guaranteed Availability Plan of your Blue Brute distributors listed at the left.

Here's how G.A.P. works: 1) you bring in your hand-held Blue Brute tool for repairs. While it's in the distributor's shop, 2) he lends you an air tool to keep the job going. He's got a complete line of Blue Brute tools to choose from. He also carries a large inventory of "Blu-Coated" parts so that repairs or replacements are made quickly and inexpensively.

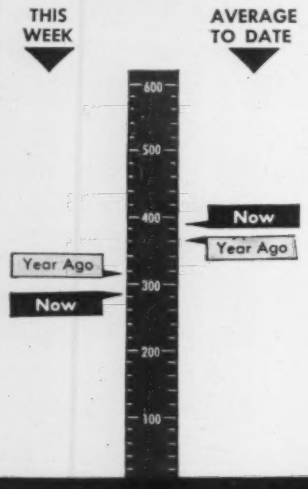
It adds up to this: buy Blue Brute tools and "no time is down-time." See your nearest Blue Brute distributor for the complete details about the Guaranteed Availability Plan. 60-1

WORTHINGTON

Construction Scoreboard

ACTIVITY THIS WEEK

Contract Awards
Millions of Dollars

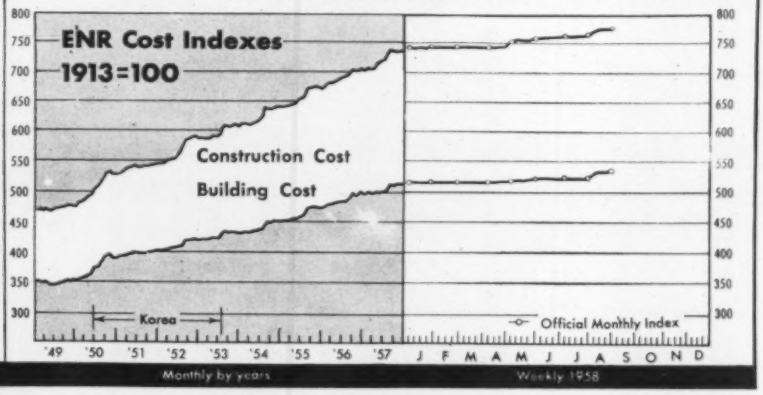


COST INDEXES AS OF NOW

ENR INDEXES (1913=100), 20-cities' average	Week of Aug. 28 1958	% Change from Jul. 31 1958	% Change from Aug. 29 1957
Construction Cost	773.47	+1.2	+4.8
Building Cost	534.88	+1.8	+3.6

* Official Monthly Index for September 1958.

To convert above indexes to 1926 = 100: Divide Construction Cost by 2.080; Building Cost by 1.850.
1949 = 100: Divide Construction Cost by 4.770; Building Cost by 3.518.



AMOUNT OF CONTRACTS LET

By Ownership	This Week	Cum. 36 wks 1958	Chge '57-'58 %
	millions		
All Heavy Constr.	$284.4†	$14,016.0	+7
Private	71.6	5,787.0	−4
Public	212.8	8,228.0	+15
State & Municipal	172.3	5,935.4	+12
Federal	40.5	2,293.6	+24
By Type of Work			
Public			
Waterworks	4.1	223.7	−11
Sewerage	16.7	436.6	+12
Bridges*	22.8	503.8	−2
Highways	78.1	2,391.3	+8
Earthwork, Waterways	7.9	784.9	−5
Buildings, Excl. Housing	42.7	1,877.8	+17
Housing	10.3	918.0	+87
Unclassified	30.2	1,101.8	+30
Private			
Mass Housing	29.7	2,770.1	+33
Commercial	11.7	1,371.9	+9
Industrial	23.0	1,311.8	−44
Unclassified	7.2	324.1	−4

* Includes private bridges.
† 4-day week.

NOTE: Minimum size projects included are: Waterworks and waterways, $44,000; other public works, $73,000; industrial buildings, $93,000; other buildings, $344,000.

NEW CAPITAL FOR CONSTRUCTION

	Week of Aug. 28	Cum. 35 wks 1958	Chge '57-'58 %
	millions		
Corporate Securities	$110.8	$3,806.0	−3
State and Municipal:			
All Except Housing	68.9	4,373.4	+18
Housing	...	33.8	−78
Federal Loans	...	137.7	−16
Federal Aid	216.2	216.2	−90
Total Nonfederal	$396.0	$8,567.1	−15
Federal Appropriations:			
Projects in U. S.	$3,096.5	$3,946.1	+45
Outside U. S.	6.5	12.8	−49
Total New Capital	$3,499.0	$12,526.0	−2

WAGE RATES, 20-cities average

	Sep. 1958	% Change from Aug. 1958	% Change from Sep. 1957
Common	$2.472	+0.2	+5.9
Skilled (average 3 trades)	3.741	+0.4	+4.4
Bricklayers	3.994	+0.1	+4.3
Structural Ironworkers	3.751	+1.6	+4.3
Carpenters	3.479	+0.1	+4.4
Equipment operators (average three types)	3.389	+0.1	+5.2
Structural Steel (average 3 mills), per cwt	5.50	+4.3	+4.3
Lumber, 2x4 Fir, per M fbm	117.46	+3.6	+1.8
Lumber, 2x4 Pine, per M fbm	103.08	+2.4	+1.1
Cement, bulk, per bbl	3.965	−0.1	+0.9
Sand, per ton	2.535	+1.4	+2.3
Ready-mixed concrete, per cu yd	13.806	+0.1	+0.8
Gypsum sheathing, ½"x2'x8', per Msf*	62.876	0	−5.1
Fiber board sheathing, ½" sq. ed., per Msf*	71.370	0	−0.4
Mineral wool insulation, 3' batts, per Msf*	70.618	+0.1	−0.3
Crushed stone, 1½", per ton, CL	2.849	+0.4	+1.5
Concrete blocks, sand/gravel, 8"x8"x16", each*	.228	0	+3.6

MATERIAL PRICES, 20-Cities average

	Aug. 1958	Jul. 1958	Aug. 1957
Brick, common per M	37.480	0	+0.2
Lime, hydrated finishing, per ton, CL	38.713	0	+6.3
Structural clay tile, 3x12x12", per M, 2,000 up*	185.403	0	+3.5
Vitrified clay sewer pipe, std 12", per ft	1.275	0	−1.7
Concrete sewer pipe, 12", per ft	1.290	0	+7.5

* Delivered, trucklots

ENR INDEX REVIEW

	Construction Cost		Building Cost		Volume	
1957	1913=100	1949=100	1913=100	1949=100	1913=100	1949=100
Sept	737.78	154.66	516.12	146.71	466	135
Oct	737.14	154.53	516.78	146.90	506	146
Nov	737.43	154.59	516.81	146.91	457	132
Dec	738.08	154.73	516.27	146.76	357	103
1957 Average	**723.85**	**151.74**	**508.67**	**144.59**	**517**	**150**
1958						
Jan	743.44	155.85	516.79	146.90	368	106
Feb	743.77	155.93	515.78	146.61	446	129
Mar	744.41	156.06	516.09	146.69	520	150
Apr	745.78	156.34	516.61	146.85	585	169
May	751.57	157.56	513.48	147.38	674	195
Jun	757.31	158.77	521.09	148.12	661	191
Jul	762.52	159.85	524.29	149.03	705	204
Aug	764.44	160.26	525.62	149.41	575	193
Sep	773.47	162.15	534.88	152.04	...	...

Ten Americans Kidnaped, Held By Cuban Rebels
20 Reported Dead in Riots Against Regime in Caracas
NIXON IS STONED BY PERU RIOTERS HEADED BY REDS

Turbulent Latin America produces headlines like these fairly often . . .

Are U. S. Contractors Getting Hurt?

Despite the headlines, violence is one of the minor worries of the U. S. contractor in Latin America. Even anti-U. S. feeling is largely confined to occasional displays, as during Vice President Nixon's recent visit in Venezuela and Peru.

The U. S. construction man's main concern in Latin America is with economics, not politics. And in much of this region the economic posers are lack of investment, inflation, and the decline of world prices for the major exports: coffee, metals, fibers. The contractor's real problems appear when desperate governments devalue currency, cut back public works, and drop a tangle of controls over their economies to limit imports and reduce inflationary spending.

It's in this context that the U. S. contractor tries to keep operating—at a profit. And this is harder than ever today. To do it he needs patience to endure frustrating delays and agility in the labyrinth of red tape.

• **Threat of violence**—But what about the headlines? How much time does a contractor lose dodging bullets in countries with a patent on revolution? "We consider these revolutions a kind of election," says an executive of an international construction firm. "They're mostly celebration and noise for everybody except the dangerous members of the old regime."

It can be less than a picnic when revolution becomes a civil war of attrition and harassment, as in Cuba. Tecon Construction Corp.'s work on that country's $16 million Hanabanilla hydroelectric station was halted last May when Fidel Castro's rebels burned $250,000 worth of generators and other electrical equipment. Though close to completion, the project had to be shut down for lengthy negotiations with the government.

Then in July there were headlines when U. S. nationals, including engineers of the Frederick Snare Corp., were kidnapped from the Moa Bay mining project in rebel-infested Oriente Province. Publicity evidently was the object, and after tense days they were returned safely.

Yet the consensus among contractors and engineers is that there is little danger involved in working in Latin America. Military or police protection is usually given when requested, they say. Besides, the struggle usually is not directed at U. S. interests.

"What really hurts are the taxes the new regime piles on to pay for social reform schemes," a construction executive says.

Or, as Venezuela did, the government may free a labor movement previously suppressed, a move certain to bring higher labor costs.

Then there is the administrative instability that often follows sudden changes in government. Thus in Venezuela there have been three ministers of public works so far this year. Colombia has had seven public works ministers in as many years. Each such change can break the liaison needed between contractors and officials for smooth progress.

• **Skeletons in the closet**—A contractor may have uneasy moments when the new regime uncovers commissions given previous officials. The kickback is standard operating procedure in many Latin American countries, but the consequences of "going along" with it are often unpredictable.

"When they find out who you have been paying off, one of two things happens," a contractor says. "All the others may then come around for their cut, or the government might start making life tough for you . . . so tough you might have to leave the country."

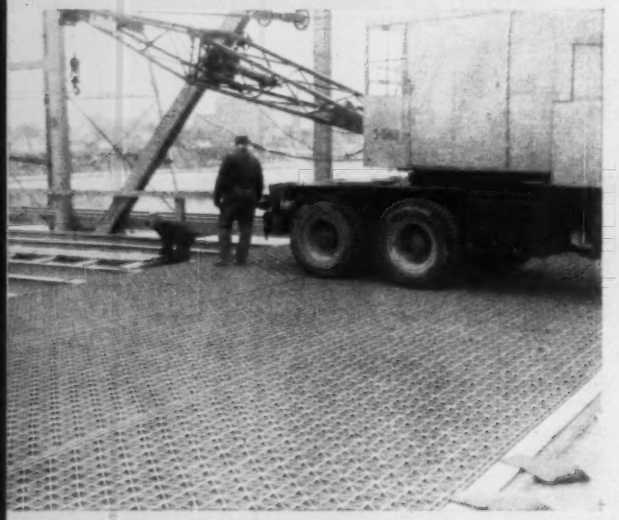
A third possibility, illustrated in Venezuela, is that payments for existing contracts may be jeopardized. Under Perez Jimenez, who was overthrown as president last January, officials collected as high as 30% on some major contract awards. The present government is honoring all inherited obligations except where firms paid very high commissions or were closely associated with Jimenez officials. U. S. companies steered clear of the big payoffs, though some paid "normal" commissions of 5% to 10%. They are in the clear, contractors report, but certain European as well as local firms are finding it difficult to collect on contracts.

The new Venezuelan government has not eliminated kickbacks. If anything, informed sources say, the practice is more widespread now than before, though it exists on lower levels. So the problem of commissions remains. The solution, one contractor asserts, is

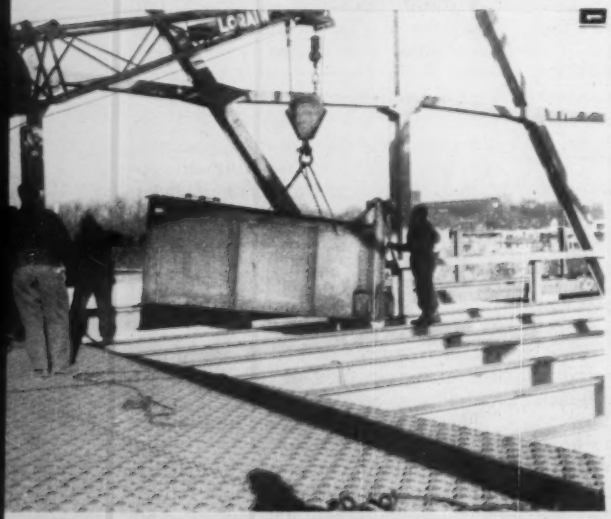
(B&F continued on page 114)

Minneapolis' new Lowry Avenue Bridge. Designed by Eric Jorgenson, City of Minneapolis Bridge Engineer, now retired. All photos by Alan Ostlund, Minneapolis.

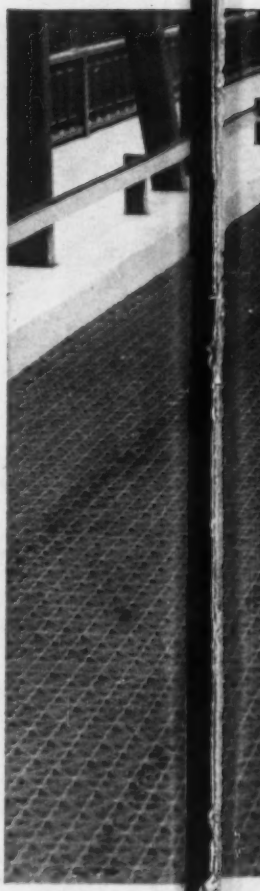
MINNEAPOLIS' Now Floored Unique



Greulich 4-Way Grid has been partially laid here, but not welded, and is providing excellent platform for workmen to use.



Another scene showing grid in use as a working platform. Here floor beams from the old bridge are being easily removed.



The Lowry Avenue Bridge, reconstructed by the City of Minneapolis and opened to traffic during the early part of July, 1958, presents a rather unique construction technique.

The old floor system was supported on falsework as a working platform for erecting the new bridge. The old trusses were removed. Piers were widened and raised and new steel trusses erected.

After the new trusses were erected, Greulich 4-Way Grid 5-inch open steel flooring was placed, but not welded. As the flooring progressed the floor beams from the old bridge were removed by a truck crane resting on the grid floor. This presented a good test of Greulich 4-Way Grid's rugged, all welded construction and it came through with flying colors.

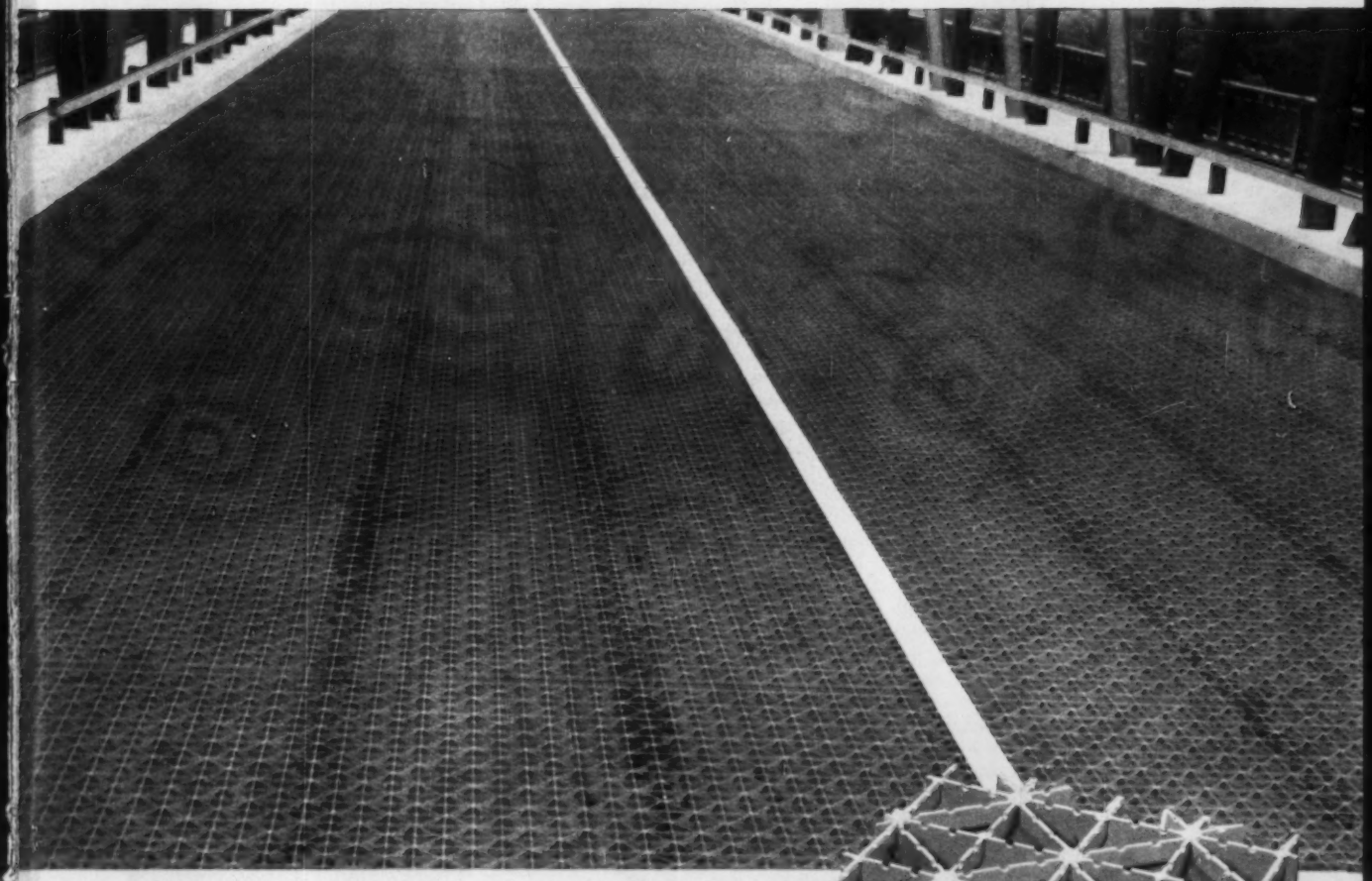
Today, four lanes of traffic flow across the Mississippi River on the new Lowry Avenue Bridge, relieving one more traffic problem for a progressive city. Since open grid does not retain snow in winter this bridge will give a year-round crossing.

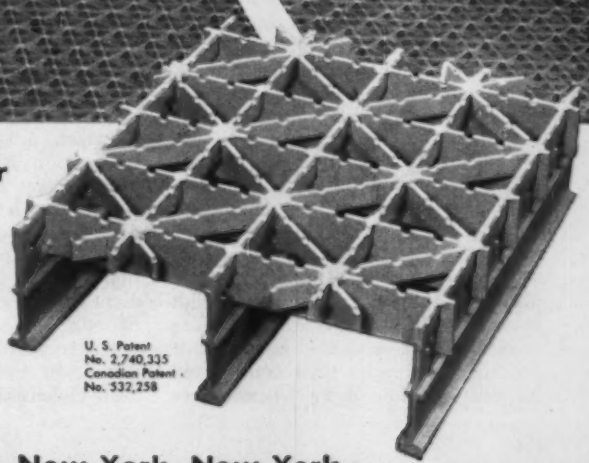
QUICK FACTS ABOUT GREULICH 4-WAY GRID

Integrally connected triangles of the grid provide a flat, single-plane, serrated surface over entire roadway to insure maximum lateral or horizontal rigidity. 7½" spacing of main bearing members permits installation with 20% fewer field welds with no loss of strength. Panels 7 ft. 3" wide hold handling costs down but still permit hauling on flat bed trucks. Grid can be filled half depth with concrete where a closed surface is desired. For additional facts, write Harvey F. Neel, Mgr., Division E-9, Kerrigan Iron Works, Inc., Nashville, Tenn.

Bridge Flooring Division (Harvey F. Neel, Manager), Nashville, Tennessee

LOWRY AVENUE BRIDGE
with GREULICH 4-WAY GRID Construction Technique Used!





- Stronger
- Quieter
- 20% Fewer Field Welds

U. S. Patent No. 2,740,335
Canadian Patent No. 532,258

THE FORGES OF KERRIGAN

KERRIGAN IRON WORKS, Inc.

General Sales Office, 280 Madison Avenue, New York, New York

not to give them. "We can't afford to get involved that way."

Another skeleton hauled out of Perez Jimenez's closet concerned the excessive cost of public works. Under his regime it's reported that contractors were pressed to rush projects to give the regime something to boast about. As a result, contracts often were let on the basis of inadequate engineering data and firms had insufficient time to prepare sound bids, officials charge. Costs ran two or three times the original estimates. When this was disclosed, after the revolution, criticism fell on some U. S. firms. S. J. Groves & Sons Co. found it had to take advertisements in Caracas newspapers to defend its work on the Guarico Dam.

• **Economic instability**—Contractors in several countries are faced with the problem of what to do when the country goes broke. Where foreign trade earnings have fallen, governments have cut back internal spending vigorously to match diminished revenues.

After Lieut. Gen. Rojas Pinilla was ousted in Colombia in May of 1957, it was found that he had left the country almost bankrupt. Inflation was rampant. The new government freed the peso, which then dropped from 2.50 to the dollar to about 6 to the dollar and adopted an austerity program. Today few public works contracts are let to foreign firms. Work on existing projects has slowed, payments tend to lag and machinery sales have dropped. Caterpillar Tractor Co.'s 1958 sales are about 20% of the 1955 figure. Worst of all for contractors, the devaluation of the peso eliminated profits on work in progress.

One contractor reports that monthly profits on one project fell from nearly 20% in 1955 to 20% in the red in the last few months of 1957. Colombian contracts have no workable escalator clauses covering costs and monetary fluctuation. What's left for U. S. firms is to cut their staffs and wait it out. Williams Bros. Corp. and Snare have only resident managers there. Others are reported leaving.

Elsewhere, devaluation does not bring such disaster. Contractors usually are able to renegotiate with the government. Planning ahead is still a precarious business, however.

"We haven't known how much money we were going to have from year to year for seven or eight years," complains a contractor whose firm builds roads in one of the Latin American countries. "All we can do is keep costs and spending under tight control and be ready to close down whenever we have to. One thing we never do, though, is use our own money. Down there it's important not to stick your neck out."

The stop-and-start situation also faces contractors in prosperous Venezuela. The new government cut back Perez Jimenez's deficit-financed program of public works, and construction was virtually suspended for five months. Though the economy is soundly based on enormous oil receipts, political uncertainties scared off private construction as well.

U. S. firms, with stateside resources to back them up, have held up better than some local contractors. The U. S. contractors have cut staffs and some are bidding on types of work they don't usually handle. They are often at a price disadvantage, particularly on small jobs. Some of them have cut bids by not charging equipment rental to a job.

• **Nationalism in action**—"Nationalism is a hardly measurable but ever-present factor in doing business here," declares a leading U. S. construction equipment dealer in Argentina. Nationalism in Latin America rarely means open dislike of U. S. nationals. During Juan Peron's 12 years of rule it meant a gradually increasing preference for domestic industry.

Nationalism assumes more subtle forms elsewhere. One of them is the closer rapport the local contractor can achieve with officials of his government. Sometimes this is exploited against the U. S. competitor, as when the local contractor bids close to the bone in the knowledge that the government will bail him out if he has trouble.

But nationalism is sometimes the label used to excuse losses to better-skilled local contractors. Says one contractor: "Make no mistake, those local boys are often damn good. In Cuba we wouldn't dare bid against them on building construction. That's something a country learns how to do first. Road construction too. We only bid on road jobs in some of those countries when they are too big or tricky for the local contractors to handle."

Several construction firms report that they make a deliberate effort to circumvent nationalist feeling in Latin America. One way is to team up with local contractors, letting them handle contract negotiations. Some firms take nationals in as partners or adopt a "national" name for their operating subsidiary in that country. Raymond International, Inc., is careful to train nationals to handle its operations wherever it can. In Colombia, the staff is entirely Colombian.

"It is best not to stick your well-polished Yankee neck out in a Latin country," declares a U. S. contractor in Mexico City. "The faster you become Mexicanized, Brazilianized or Argentinized, the better your relationship with government officials and local businessmen will be."

But the only way U. S. contractors can work over the long term is to accept nationalism, says Henry C. Boschen, Raymond's vice president for overseas operations. "It's only natural that the local people want to do as much as possible. And when they learn how, it's hard to compete with them because they have many advantages. The U. S. contractor has to be ready to move into more advanced specialties as the local contractors develop their skills."

Ike Ends Fannie Mae's Par-Buying Program

Homebuilding's recovery is assured, President Eisenhower seemed to be saying last week when he told the Federal National Mortgage Association to start charging discounts on some of its special assistance mortgage purchases. The action came automatically, as a result of Congress's failure to pass legislation extending the par-purchase law that expired August 7. Yet it fits the present Administration mood—that inflation is the danger now (ENR Aug. 21, p. 23).

The biggest group affected are mortgages up to $13,500, backed by the Federal Housing Administration or the Veterans Administration, and for new housing. Par-purchasing of these spearheaded the Administration's attack on recession in homebuilding.

In July the industry was building at an annual rate of 1.16 million, hardly a recession performance. The discounts are not likely to set this progress back. The building season is nearing its end. More important, perhaps, interest rates for money are heading up (ENR Aug. 21, p. 132). The government's rehabilitation work is done, the Administration is saying; let the private market carry the recuperating patient.

The discounts apply only to mortgages offered to the agency on August 28 and after, not to the more than $800 million in mortgages Fannie Mae already has committed itself to buy. Here are the discounts:

• For one to four family housing, 99½ for 5¼% mortgages, 98½ for 5% mortgages and 97½ for 4¾% mortgages.

• For multifamily housing, 99½ for 5% mortgages, 99 for 4½% mortgages, and 100 for Capehart housing mortgages.

August Awards Didn't Match July

Seasonal decline, drop in Capehart projects hurts—but can't kill 1958's 7% lead over 1957 volume

A sharp cutback in federal awards and seasonal decline in state and local contracts pulled the August awards total 18% below July to $1.6 billion. But it was still the second largest August total on record. And the eighth-month total, $13.7 billion, was 7% over the same 1957 period.

A much reduced volume of Capehart military housing caused the drop in federal awards to less than one-third the July rate and the lowest volume since the federal upsurge began in April. Public mass housing slumped 79% in August to $46 million, but the $908 million awarded to date is still 90% ahead of last year.

Highway awards are setting new records this year. August's $369 million was at an all-time weekly average pace, 14% ahead of July and 41% above a year ago. A fourth of all road contracts came from the southern region, where both Kentucky and Tennessee awarded over $20 million each. But New York topped all states with $36.3 million. In eight months, contractors have booked over $2.3 billion of new highway contracts, 7% more than a year ago, and a record.

Private construction turned up for the second straight month, based on weekly averages. Volume through August totaled $5.7 billion, only 3% short of last year. Every type of private project gained compared with July, except mass housing. Residential projects totaled $332 million, a 72% gain over a year ago. In fact, the $2.7 billion of new housing contracts in the first eight months gave contractors their biggest market, one 35% greater than a year ago. Next in line was commercial building, where the $1.3 billion awards total was 12% ahead of last year during the eight months of 1958. The August total, $186 million, was 35% bigger than the year-ago figure and 43% ahead of the July total.

Industrial buildings construction so far this year is 44% off 1957. The awards total for this category was $160 million in August.

Costs Break Ceiling, ENR Indexes Show

September construction and building costs have been pushed to record levels by hikes in lumber, steel and wage prices. ENR's Construction Cost Index for September jumped nine points over August to a record 773.47 (1913=100), 4.8% higher than a year ago. The Building Cost Index, also nine points above the August value, is 534.88 (based on 1913), or 3.6% above 1957.

Danger of fire has sharply curtailed logging operations in the Northwest, though demand is growing. Further lumber price increases are expected. The steel price boost of 4.3% accounts for six points of the increase in the Construction Cost and Building Cost Indexes. Wage increases due in September and through the rest of the year will be fewer than in July and August, when most contract negotiations ended.

Douglas fir and southern pine prices are at their highest levels since October, 1956. For the first time in nearly two years current prices exceed year-ago prices. U. S. average prices of Douglas fir are up 1.8% over a year ago, while the southern pine average is 1.1% higher than last year.

The climb of wage rates has slowed. ENR's 20-cities average wage for common labor on building and heavy construction edged up 0.2% over August while the skilled labor average (bricklayers, carpenters, structural ironworkers) moved up 0.4%.

Portland cement prices are off slightly in a few cities now that the 3% freight tax is gone. Cincinnati, Atlanta, New York, and Minneapolis report drops in bulk cement prices of 2 cents to 3 cents a barrel.

Engineering Construction Contracts—August '58

ENGINEERING NEWS-RECORD *reports contineutal U. S. construction projects of the following minimum costs—Waterworks excavation, drainage and irrigation,* $44,000; *other public works,* $73,000; *industrial buildings,* $93,000; *other buildings,* $344,000.

Four Weeks—Thousands of Dollars (000 Omitted)

	August, 1958							U. S. Cumulative Eight Months		%	Canada
	New England	Middle Atlantic	South	Mid-West	West of Mississippi	Far West	Total U. S.	1958	1957	Change '57 to '58	August 1958
Public Works											
Waterworks	135	1,885	5,246	1,773	3,740	7,724	**20,503**	**219,665**	246,671	−11	1,635
Sewerage	8,818	9,720	8,693	15,363	9,412	4,261	**56,267**	**419,712**	376,795	+11	11,520
Bridges	2,269	13,575	9,546	13,380	8,686	8,199	**55,655**	**472,070**	508,786	− 7	5,628
Earthwork and waterways	456	5,804	8,720	12,521	7,782	14,994	**50,277**	**776,724**	767,404	+ 1	517
Streets and roads	24,993	80,998	91,273	66,010	63,009	42,720	**369,003**	**2,313,406**	2,160,043	+ 7	19,629
Public buildings, residential	.....	5,683	12,650	11,638	7,366	9,008	**46,345**	**908,051**	477,169	+90	.....
Other public buildings	13,523	36,366	22,561	37,402	43,130	38,678	**191,660**	**1,834,810**	1,561,306	+18	47,036
Unclassified	2,041	11,834	20,141	45,622	20,133	10,755	**110,526**	**1,071,717**	841,672	+27	21,783
Total public	**52,235**	**165,865**	**178,830**	**203,709**	**163,258**	**136,339**	**900,236**	**8,016,155**	**6,939,846**	**+16**	**107,748**
Federal government (included in above classifications)	1,656	6,640	37,848	52,463	47,643	20,963	**167,213**	**2,253,123**	1,819,512	+24	26,338
Private											
Bridges	.....	.....	.....	487	.....	.....	**487**	**8,996**	3,091	+191	.....
Industrial buildings	5,075	18,186	19,204	30,330	83,244	3,658	**159,697**	**1,288,516**	2,313,835	−44	9,397
Mass housing	43,317	122,255	21,169	70,209	31,952	43,177	**332,079**	**2,740,518**	2,031,319	+35	16,280
Commercial buildings	9,618	74,412	11,230	29,805	21,743	39,576	**186,384**	**1,360,300**	1,213,889	+12	19,963
Unclassified	750	519	4,457	11,503	24,379	1,184	**42,792**	**317,108**	338,097	− 6	12,030
Total private	**58,760**	**215,372**	**56,060**	**142,334**	**161,318**	**87,595**	**721,439**	**5,715,438**	**5,900,231**	**− 3**	**57,670**
Total Engineering Construction:											
August, 1958—4 weeks	**110,995**	**381,237**	**234,890**	**346,043**	**324,576**	**223,934**	**1,621,675**	.....	.....	....	**165,418**
July, 1958—5 weeks	206,901	460,431	330,889	393,886	511,683	577,964	**2,481,754**	.....	.....	....	128,567
August, 1957—5 weeks	127,849	345,411	293,752	446,504	339,826	252,118	**1,805,460**	.....	.....	....	129,911
Eight months—1958	**930,756**	**3,544,396**	**1,767,247**	**2,492,745**	**2,748,309**	**2,248,140**	.....	**13,731,593**	.....	**+ 7**	**1,128,036**
Eight months—1957	847,058	3,028,879	1,500,199	2,977,243	2,365,993	2,120,705	.....	.....	12,840,077	....	1,119,779
% Change '57 to '58	+10	+17	+18	−16	+16	+6	.....	.....	.....	....	+1

You'll see a demonstration of the completely revolving head. The entire head or nozzle section can be faced in any direction with none of the restrictions imposed by ordinary flanges. All that is necessary is to loosen the bolts in the flange.

We'll be glad to show you the R. D. Wood Swivel Joint Hydrant right in your office

We'll show you the optional breakable flange and stem coupling which permit quick repair and thus give the community better fire protection—and you won't have to get out of your office chair!

We mean a scale working model, of course, about 2 feet high and accurate down to the last nut and bolt. As we take it apart for you, you will see quite clearly the hydrant's sound, simple construction, the smoothly rounded changes in diameter which reduce friction and deliver water at full pressure.

It's a really reliable hydrant. Like to see it? Write us today for a demonstration.

R. D. WOOD COMPANY

Public Ledger Building, Philadelphia 5, Pa.

Manufacturers of "Sand-Spun" Pipe (centrifugally cast in sand molds) and R. D. Wood Gate Valves

Labor Reform: New Approach Needed

By Charles J. Harding
Associate Editor

The Kennedy-Ives labor bill may be dead, but it's far from buried. And the process that killed it will be started again when Labor Secretary James P. Mitchell resubmits the Administration's labor recommendations to the 86th Congress in January.

What killed the bill? It went too far and it didn't go far enough. Its fatal defect was combining reform legislation with basic Taft-Hartley Act amendments.

The same trap lies ahead. There's been no overhaul of the law in its 11 year history and there's not likely to be any for some time. Yet the need for legislation to curb corruption and to promote union democracy continues, as does the need for construction industry amendments to the national law.

The way out for the construction industry lies, perhaps, in a new approach:

- General reform legislation that stands by itself, just as the welfare fund disclosure bill does.
- A new law, similar to the Railway Labor Act, that takes the industry out from under the Taft-Hartley Act and puts it under legislation tailored to the peculiar needs and problems of the industry. This type of legislation often has been mentioned with favor by Richard J. Gray, president of the AFL-CIO Building and Construction Trades Department.

BEHIND THE SMILES, AFL-CIO's George Meany and Labor Secretary James Mitchell traded charges of double talk over defeat of Kennedy-Ives labor reform bill.

- **Double talk**—Viewed in any light, the record of the Kennedy-Ives bill presents a dismal picture. Seldom has any legislation been so clothed in double talk and been so subject to such basically opposing forces.

Organized labor, with some exceptions, publicly supported the bill. It had to in order to keep faith with its own campaign against corruption. And labor gambled that the bill, if passed, would close the door to more restrictive legislation next year. The building trades supported the bill because it would have given them something they've long sought—legalizing the pre-hire contract.

In private, however, many labor leaders sighed with relief when the bill failed. They considered it an unwarranted intrusion into the internal affairs of unions and perhaps the opening wedge for more deadly controls in the future. And some thought the bill's reporting requirements and penalties would have put an intolerable administrative burden on local unions. To be free from these, they were willing, for example, to scrap the restoration of voting rights to economic strikers, the federal approach to the jurisdictional no-man's land, the modestly narrowing redefinition of "supervisor" and the tit-for-tat of requiring non-Communist affidavits from employers, which were contained in Title VI of the bill.

Employers also blew both hot and cold. They called for additional curbs on union behavior but sought freedom from any on themselves. They deplored punitive measures while calling for reform legislation, but demanded sharp restrictions on picketing and boycott activities. Outside the construction industry, employers condemned the pre-hire contract for construction unions.

Politicians were caught in the middle but came out on top. They had a chance to talk for the record and they got a good campaign issue.

The pendulum is back where it started with President Eisenhower and Secretary Mitchell saying in one breath that Congress should have passed "legislation to curb the racketeering, corruption and abuses of trust and power, which Senator McClellan's committee has found to exist." In the next breath they condemn the Senate, which passed the bill 88 to 1, for weakening the Taft-Hartley Act, for failing to get into such basic issues as boycotts and picketing and for taking a federal rather than a states' right approach to the no-man's land problem.

Neither mentions that Senator McClellan helped draft the bill or that the original bill was amended to meet most of Mr. Mitchell's objections after he returned from Geneva in June.

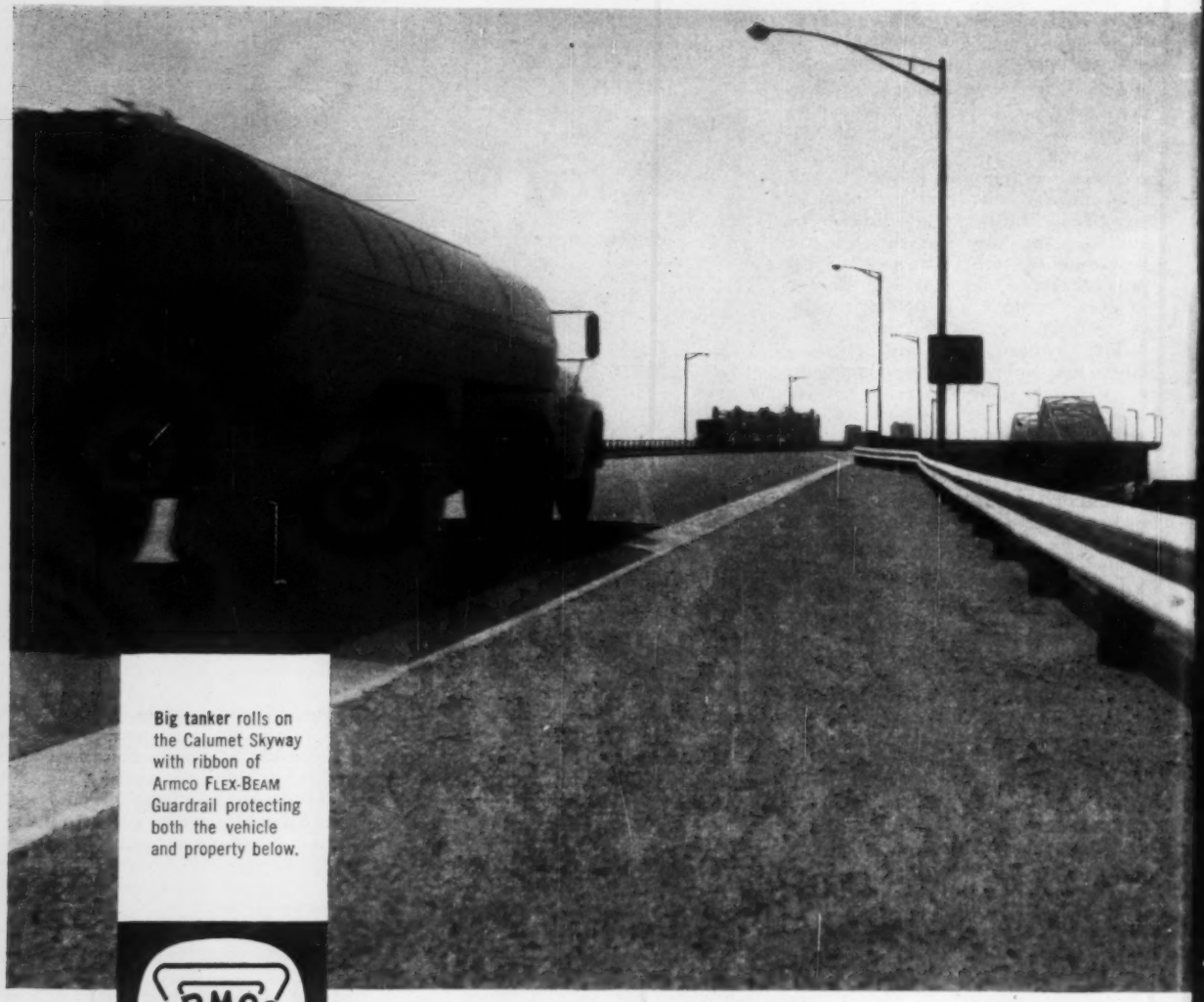
The double talk from all sides adds up to a single question: Can reform legislation be tied practically and realistically to changes in our basic labor law? Based on the record, the answer seems to be "no."

- **Some guideposts**—In mapping out their future legislative programs in the light of the Kennedy-Ives failure, however, members of the construction industry have three pieces of bedrock on which to stand—the McClellan committee recommendations, the industry's Joint Committee recommendations and the Administration's sympathetic attitude toward the problems of the industry.

(Labor continued on page 120)

Look how Armco Products

CHICAGO'S CALUMET



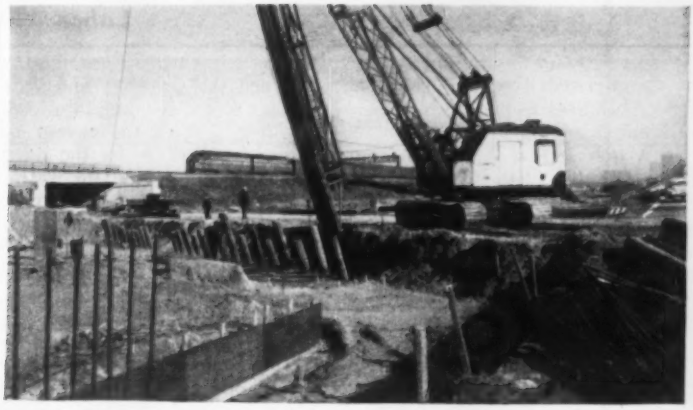
Big tanker rolls on the Calumet Skyway with ribbon of Armco FLEX-BEAM Guardrail protecting both the vehicle and property below.

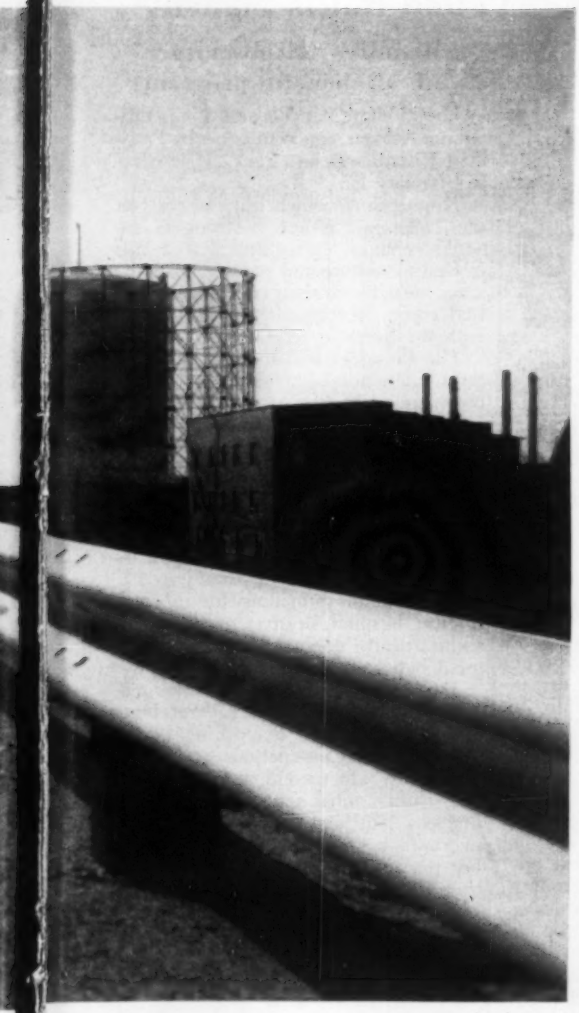
ARMCO®

A better way to build...

ARMCO CONSTRUCTION

work on SKYWAY





More than Quarter-Million feet of Armco Foundation Pipe Used; Armco Perforated Pipe, FLEX-BEAM Guardrail also prominent

Nearly eight miles long, the impressive new Calumet Skyway crosses some 30 grade-separation and bridge-type structures as it rushes traffic from the western end of the Indiana Toll Road to downtown Chicago. To do this big bridge construction job, builders of the Skyway used a quarter-of-a-million feet of Armco Foundation Pipe for cast-in-place piles. This included 200,000 feet of Armco Pipe Piling and 50,000 feet of Armco HEL-COR® Pile Shells.

Another Armco Product was put to work in *subdrainage* behind the bridge abutments and retaining walls. More than 30,000 feet of Armco Perforated Pipe was installed to collect and remove unwanted ground water and keep substrata stable.

Most visible evidence of Armco Construction Products at work on the finished job is Armco FLEX-BEAM® Guardrail. Long ribbons of this safety rail stretch along the fill sections of the Skyway. Mounted on wood posts, FLEX-BEAM has a combination of flexibility to cushion any impact, and beam strength to help redirect a colliding vehicle back onto the right-of-way.

There are good reasons why these and other Armco Construction Products have won acceptance from the builders of important roads like the Calumet Skyway. Foremost—*they have been proved in service*. Write us for data or assistance with your specific construction project. Armco Drainage & Metal Products, Inc., 5888 Curtis St., Middletown, Ohio. Subsidiary of Armco Steel Corporation. In Canada: write Guelph, Ontario. Export: The Armco International Corporation.

Line of 8-inch Armco Perforated will be buried under fill behind bridge abutment on Calumet Skyway to provide adequate subdrainage.

PRODUCTS

If the Kennedy-Ives bill had done what it purported to do, it would have been limited in scope.

On March 24 the McClellan committee came up with five legislative recommendations. One was for legislation to regulate and control pension, health and welfare plans. That was disposed of by a separate bill, leaving these four recommendations for legislation:

1. Regulate and control union funds.
2. Insure union democracy.
3. Curb activities of middlemen in labor-management disputes.
4. Clarify the no-man's land in labor management relations.

All were covered in the Kennedy-Ives bill, but they were hopelessly tied to the Title VI Taft-Hartley amendments.

• **Joint committee**—In this controversial area of general legislation, however, the industry has agreed on some changes.

These were submitted to the Administration in 1957 by a special Construction Advisory Committee, composed of union and contractor representatives, appointed by Secretary Mitchell. The committee recommended these amendments in the Taft-Hartley Act:

1. Permit employer contributions to apprentice training funds.
2. Recognize association bargaining and the right to take concerted action in the face of whipsawing by unions.
3. Permit certification of construction unions without a prior election if there's a history of collective bargaining between the employer and the union.

The Kennedy-Ives bill incorporated the first, ignored the second and contained a substitute for the third.

The substitute was the pre-hire contract. This was endorsed by the building trades in preference to the certification without election because of the latter's effect on the settlement of jurisdictional disputes. The homebuilders and the Associated General Contractors endorsed the certification without election. Both methods, however, seek to cure the difficulty of getting certifications in an industry where there's little continuity of employment.

• **Administration's views** — President Eisenhower has long been aware of this problem and of the complex labor problems that arise when several contractors are working at the same site.

Last January he asked Congress to permit the certification of construction unions without a prior election and to treat all employers on a construction job as primary rather than secondary or neutral employers. He also asked that employer contributions to apprenticeship funds be legalized.

Two weeks ago, Secretary Mitchell said the President's earlier labor legislation recommendations will be sent back to Congress in January. By that time, the McClellan committee will have updated its own recommendations. Will Congress and the construction industry start with a clean slate or go back to the Kennedy-Ives confusion?

New Hiring Clause Incorporated

The labor contract that ended the lengthy strike of operating engineers on Associated General Contractors projects in Oregon and southwest Washington gives the union a 75 cent package wage increase spread over three years and contains a long and complex clause to meet the new hiring hall rules.

The agreement calls for a 25 cent raise retroactive to March 31, another 25 cents next March 31 and a 15 cent raise plus a 10 cent pension fund contribution the following year. Travel allowances are based on a four-zone, 34-city system and range from 25 cents to $1.35 effective next March, with substantial increases scheduled for the following year. The present 10 cent hourly health and welfare payment continues.

In an effort to comply with the Mountain Pacific case mandate on hiring halls, the contract states that "there shall be no unlawful discrimination by the contractor or the union with respect to hiring, tenure or discharge of any workmen and any requirements as to membership or non-membership in any union shall be in accordance with the National Labor Relations Act of 1947, as amended."

The union is recognized as "the prime source of qualified workmen." Dispatching by the union "shall be on the basis of objective employment criteria, including experience and competence and without regard whatsoever to membership or non-membership in the union."

Although the contractor—and this includes those in the heavy and highway and building divisions of the Portland AGC and in the Portland Home Builders Association—must give the union "reasonable advance notice of his needs for workmen," it is agreed that "the contractor's source of labor supply . . . is not restricted exclusively to the union source."

The contractor must notify the union whenever a man is hired, giving name, address, date of hire and classification.

A 31-day union shop clause is included in the contract.

The contractor reserves the right to request workmen by name or workmen who have been recently laid off or terminated by the contractor.

In case the new clamp-down on hiring halls doesn't stand up in court, the contract provisions on hiring procedures can be reopened on 30 days' notice.

Fund Bill Is Signed

Requires full disclosure of all benefit programs

The Welfare and Pension Plans Disclosure Act was signed into law by President Eisenhower last week. It is effective January 1.

The measure, which leans heavily on the Teller bill, is not so strong as the Senate version. It requires that details of health, welfare and pension plans be made available to their beneficiaries and that copies of required reports be filed with the Secretary of Labor.

The President said the law needs extensive amendments before it can become truly effective.

The measure applies to all plans whether administered by an employer (including employer groups and associations), a union or jointly by both. The only exceptions are plans affecting not more than 25 employees and plans affecting employers, employees or industries not in interstate commerce.

All programs providing for medical, surgical, hospital, sickness, accident, disability, death, unemployment or retirement benefits are covered by the law.

Two types of reports are required. The first, due within 90 days of January 1, is a detailed description of the plan, including instructions on how to file claims. The second, and continuing one, is an annual report of the plan's finances. The first must be signed and sworn to by the plan's administrators, but the annual report may be sworn to by a licensed public accountant.

Each report must be made available to the plan's beneficiaries in the principal office of the plan and copies of each must be mailed to those beneficiaries who request them in writing.

Copies of each report must be filed with the Secretary of Labor. He must make these available for public inspection and prepare the reporting forms.

Wilful violation of any provision carries a fine of $1,000 and a prison sentence of six months. Beneficiaries who ask for but don't get copies can collect $50 for each day of delay.

OFFICIAL PROPOSALS

Bids: September 16, 1958

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
FOR
THE CONSTRUCTION OF SUBSTRUCTURES
FOR
THE AMERICAN RAPIDS BRIDGE AND APPROACHES AT NIAGARA FALLS, NIAGARA COUNTY, NEW YORK
SPECIFICATIONS NO. 5826 A
NIAGARA CONTRACT NO. N 14

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the construction of the Substructures for the American Rapids Bridge and Approaches, Niagara Falls, New York until 10:30 a.m. Eastern Daylight Saving Time on the 16th day of September, 1958 at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place the proposals will be publicly opened and read aloud.

The principal items of work are as follows:

Unclassified Excavation	3,200 cu. yds.
Selected Fill	6,000 cu. yds.
Portland Cement (Type II)	3,000 bbls.
Concrete	2,000 cu. yds.
Bar Reinforcement Steel	155,000 lbs.
Rubble Stone Masonry	100 cu. yds.

The work shall be completed on or before May 1, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, at The Coliseum Tower, 18th Floor, 10 Columbus Circle, New York 19, New York, upon application and prepayment of a fee of Ten ($10.00) dollars per initial set of contract documents, and five ($5.00) dollars per set for additional sets, no part of which shall be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's New York Office, and at the Authority's Field Office, 2640 Main Street, Niagara Falls, New York and in the offices of the Engineer, Praeger-Kavanagh, 126 East 38th Street, New York 16, New York, and may be inspected by prospective bidders during office hours.

Bids must be made in accordance with the instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 per cent of the gross sum price bid.

The right is reserved to reject any or all bids.

W. S. CHAPIN
GENERAL MANAGER

Bids: September 23, 1958

Contract LGA-310.003

THE PORT OF NEW YORK AUTHORITY
LA GUARDIA AIRPORT
EXTENSION OF APRON

Sealed proposals for the construction of paving and utilities for the extension of the apron at La Guardia Airport will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, September 23, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen at the office of the Engineer of Design of the Authority, Room 1115. Documents will be furnished upon deposit of $30.00 per set for not more than three sets to any one company (each set including one copy of the contract drawing). Additional sets will be furnished upon payment of $30.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, September 4, 1958

Bids: September 25, 1958

Commonwealth of Pennsylvania Department of Mines and Mineral Industries Harrisburg, Pennsylvania

NOTICE TO BIDDERS

Sealed proposals will be received by the Department of Mines and Mineral Industries, Main Capitol Building, Harrisburg, Pennsylvania, until 11:00 A.M., Eastern Daylight Saving Time, the 25th day of September, 1958, at which time and place they will be opened publicly and read aloud for the following:

Drilling two (2) thirty-six (36") boreholes cased with thirty inch (30") O.D. steel casing pipe from the surface to a depth of approximately five hundred and one feet (501') and approximately thirty-two feet (32') of uncased twenty-eight inch (28") borehole from the bottom of the thirty-six inch (36") borehole to the Clark Seam, a total depth of approximately five hundred thirty-three feet (533') in each of two separate boreholes a total of approximately one thousand and sixty-six feet (1066'), for the installation of two (2) deepwell pumps under Flood Control Project No. 6, Phase B, Part I, at the Number 14 Colliery of the Pennsylvania Coal Company, Jenkins Township, Luzerne County, Pennsylvania, in conformance with the specifications of the Department of Mines and Mineral Industries of the Commonwealth of Pennsylvania for said project, a copy of which specifications will be made a part of the Contract if awarded.

This project is one to the cost of which the United States Government may contribute under Public Law 162, 84th Congress (69 Stat. 352) and is subject to the terms of that Law, as well as to Act No. 82, July 7, 1955, Commonwealth of Pennsylvania, and to the "Procedures for Administration of the Act of July 15, 1955, to Provide for the Conservation of Anthracite Coal Resources through Measures for Flood Control and Anthracite Mine Drainage, (Public Law 162, 84th Congress, 69 Stat. 352), and to the State-Federal Contribution Contract for Food Control Contract No. 6. The Commonwealth's acceptance of and liability arising out of any bid shall be subject to contribution by the United States Government under the provisions of said Contribution Contract.

Specifications and Bid Proposal Forms may be obtained free of charge by request to the Deputy Secretary, Department of Mines and Mineral Industries, Anthracite Institute Building, 237 Old River Road, Wilkes-Barre, Pennsylvania.

Joseph T. Kennedy
Secretary of Mines and Mineral Industries

Bids: September 25, 1958.

Power Authority of the State of New York

ADVERTISEMENT FOR PROPOSALS
For the Furnishing and Delivery of
High Voltage Disconnecting Switches for
Niagara Switchyard
Niagara Power Project
Specifications No. PA-N-25017
Niagara Contract No. NP21

NOTICE TO CONTRACTORS: The POWER AUTHORITY OF THE STATE OF NEW YORK will receive sealed proposals for the furnishing and delivery thereof f.o.b. Niagara Switchyard Area, University Siding, Niagara Falls, New York, of 115 kv and 230 kv disconnecting switches for the Niagara Switchyard in Lewiston, Niagara County, New York, until 10:30 A.M. Eastern Daylight Saving Time on the 25th day of September, 958, at the Authority's Office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, at which time and place proposals will be publicly opened and read aloud.

Bids will be received for 139, 78 or 61 high voltage disconnecting switches and associated equipment in accordance with the bidding schedules.

Delivery of the high voltage disconnecting switches will be required beginning on or before September 30, 1959.

Plans, Specifications and Proposal Forms for the work may be obtained from the Power Authority of the State of New York, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York upon application and prepayment of a fee of Ten Dollars ($10.00) per initial set of contract documents, and Five Dollars ($5.00) per set for additional sets, no part of which will be refunded. Plans, Specifications and Proposal Forms for the work will be on file in the Authority's Office and in the offices of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and may be inspected by prospective bidders during office hours.

Bids must be made and returned in duplicate in accordance with instructions contained in the Information for Bidders. Guarantee will be required with each bid in an amount not less than 20 percent of the gross sum bid for any bid schedule.

The right is reserved to reject any or all bids.

W. S. Chapin
General Manager

Bids: October 7, 1958

Contract GWB-190.022

THE PORT OF NEW YORK AUTHORITY
GEORGE WASHINGTON BRIDGE
LOWER LEVEL EXPANSION
NEW JERSEY APPROACH
PHASE I

Sealed proposals for the construction of the north and south marginal streets between Lemoine Avenue and Hudson Terrace, including the demolition of buildings and the construction of a bridge over the south marginal streets at Central Road, all in connection with the New Jersey Approach for the Lower Level Expansion of the George Washington Bridge will be received at the office of the Chief Engineer of The Port of New York Authority, Room 1100, 111 Eighth Avenue, New York 11, N. Y., until 2:30 P.M. on Tuesday, October 7, 1958, at which time said proposals will be opened and read in Room 1108.

Contract documents may be seen after September 11, 1958, at the office of the Assistant Chief Engineer for Design of the Authority, Room 1115. Documents will be furnished upon deposit of $50.00 per set for not more than three sets to any one company (each set including one copy of the contract drawings). Additional sets will be furnished upon payment of $50.00 per set, which payment is not returnable. Deposits and payments shall be delivered to the Treasury Department, Room 1001, where a receipt will be issued. The receipt shall be delivered to Room 1115, where the documents will be furnished.

Those who have submitted a bid on the contract will receive a refund of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals. Those who have not submitted a bid will receive a refund of one-half of the deposit for each set of documents, not exceeding three, returned within forty days after the opening of proposals.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman

New York, September 4, 1958

U. S. Government

INVITATION FOR BIDS. Sealed bids, in triplicate, will be received at the Office of the Regional Director, Housing and Home Finance Agency, O. A., Room 906, 346 Broadway, New York 13, N. Y., until 12:00 o'clock P.M. (E.D.S.T.) on the 16th day of September, 1958, and then publicly opened and read aloud for furnishing all labor and material and performing all work for the construction of an elementary school at Plattsburgh Air Force Base, Plattsburgh, New York, including General Construction, Heating and Ventilating, Plumbing, Electrical Work and Fixtures, and Site Work. The Instructions to Bidders, Form of Bid, Form of Contract, General Conditions, Specifications, Plans and Form of Bid Bond, Performance Bond and Payment Bond, may be examined at the Office of the Base Installations Officer at Plattsburgh Air Force Base, Plattsburgh, New York, or at the offices of Knappe and Johnson, 2110 Northern Boulevard, Manhasset, New York or Two Overhill Road, Scarsdale, New York, or at the Office of the Regional Director, Housing and Home Finance Agency, O. A., Room 906, 346 Broadway, New York 13, N. Y., and copies thereof obtained at either of said offices upon payment of $7.50 for each complete set of documents, which fee shall not be refunded and the documents shall remain the property of the prospective bidders. Such fee shall be in the form of a certified check, bank cashier's check, or postal money order, made payable to the Housing and Home Finance Agency, O. A., RALPH B. CORNELL, Regional Director, CFA.

OFFICIAL PROPOSALS

Bids: September 18, 1958

New York State Road Work

NOTICE TO CONTRACTORS: STATE DEPARTMENT OF PUBLIC WORKS, ALBANY, N. Y.—Pursuant to the provisions of the Highway Law, Canal Law, and special provisions for projects financed with Federal Aid Funds, sealed proposals will be received until ten-thirty o'clock A.M., advanced standard time, which is nine-thirty o'clock A.M., eastern standard time, on the 18th day of September, 1958, by Henry A. Cohen, Director, Bureau of Contracts, 12th Floor, The Governor Alfred E. Smith State Office Building, Albany, N. Y., for the following Projects:

County	Contract No.	Name	Miles	Type	Deposit	Estimated Cost of Work
DISTRICT No. 1, G. L. Nickerson, District Engineer, 353 Broadway, Albany 1, New York						
Essex (Rte. 73)	RC 58-121	Village of Lake Placid: Sentinel Road, S.H. 9319	0.07	Asphalt Concrete Prestressed Conc. Br. 34′	$6,000 Plans $2	$110,000
Saratoga (Rte. 67)	FARC 58-131	Ballston Spa Scotch Church Pts. 1 & 2, S.H. 5534-5542 Project DS 382(2)	5.21	Asph. Conc. = 5.15 Mi. Misc. Work = 0.06 Mi. Reinf. Conc. Box Br. 20′	$50,000 Plans $5	892,000
Warren (Rte. 9 & 9L)	RC 58-135	Various Locations on S.H. 417, S.H. 5068, S.H. 5227, S.H. 5157, S.H. 5158, S.H. 1595, S.H. 691, and S.H. 1666	....	Roadside Development	$700 Plans $2	13,000
Washington (Rte. 40)	FARC 58-127	Middle Falls South Argyle, S.H. 1759 South Argyle-Argyle, S.H. 1081 Project DF 1033(2)	5.89	Asph. Conc. = 5.83 Mi. Misc. Work = 0.06 Mi.	$54,000 Plans $3	988,000
DISTRICT No. 2, L. Ketchum, District Engineer, 109 No. Genesee Street, Utica 1, New York						
Montgomery (Rte. 30)	FAC 58-16	City of Amsterdam: North-South Arterial (Rte 55 to Mohawk River) Project U-UG-604(5)	0.63 (1.34 Acc.)	Asph. Conc. Ty. 1A = 0.63 Mi. Acc. Asph. Conc. Pavt. = 1.11 Mi. Acc. Cem. Conc. Pavt. = 0.23 Mi. 2 Hy. Seps. Comp. W-F Beams 166.4′ & 171.5′ 1 Hy. Sep. Reinf. Conc. Rigid Frame 36′ 1 Hy. RR Sep. Comp. W-F Beam 169.2′	$115,000 Plans $10	2,054,000
DISTRICT No. 3, E. E. Towlson, Acting District Engineer, 333 E. Washington Street, Syracuse, New York						
Cayuga (Rte. 38)	FARC 58-128	Wyckoff Cascade Pt. 3, S.H. 8267 Cascade Moravia, S.H. 1642 Project F 431(4)	4.13	Asphalt Concrete Prestressed Conc. Beam Br. 172′	$52,000 Plans $3	944,000
Oswego	U.S. 100	Lock 3, Oswego Canal, Fulton, New York	....	Extending Existing Gates, Lowering & Replacing Existing Sills & Misc. Work	5% of Bid Plans $10	Confidential
Cayuga & Tompkins (Rtes. 38, 326, 34B; 38A, 90, 79, 13, 227, 13A, 34, 327; & 96B)	RC 58-126	Various Locations on S.H. 752, S.H. 1173, S.H. 5689, S.H. 5525, S.H. 383, S.H. 8406, S.H. 1877, S.H. 1004, S.H. 338, S.H. 483, S.H. 1001, S.H. 1431, S.H. 1532; S.H. 72, S.H. 681, S.H. 5575, S.H. 1891, S.H. 5567; S.H. 1189, and S.H. 5122	....	Roadside Development	$500 Proposal Only $2	9,000
Cortland & Tompkins (Rte. 222)	FARC 58-124	Cortland Groton Pts. 1, 2, 3 & 4, S.H. 446, 996, 1433 Project S 478(1)	5.46	Asphalt Concrete, Type 1A Comp. I Beam 132′	$53,000 Plans $3	949,000
Onondaga	RC 58-136	Baldwinsville Cicero, S.H. 1039	....	Cleaning & Painting 1 Bridge	$500 Plans $2	9,000
Onondaga	FASS 58-10	Brewerton Connection to Interstate Route 505 Project S 538(1)	0.45	Asphalt Concrete	$5,000 Plans $2	88,000
Seneca (Rte. 96A)	FARC 58-122	Lodi Interlaken, S.H. 5589 Project DS 463(1)	4.99	Asphalt Concrete	$30,000 Plans $3	592,000
DISTRICT No. 4, B. F. Perry, District Engineer, Barge Canal Terminal, Rochester 1, New York						
Genesee & Wyoming	FASSH 58-10 FASSH 58-11	Attica Darien Pt. 2 Attica Darien Pt. 1 Project S 495(1)	4.17	Asphalt Concrete	$30,000 Plans $3	573,000
Monroe	LOSP 58-2	Lake Ontario State Parkway, (Sections A and B)	9.17	Asph. Conc. = 7.34 Mi. Misc. Work = 1.83 Mi.	$55,000 Plans $10	1,001,000
DISTRICT No. 5, E. G. H. Youngmann, District Engineer, State Office Bldg., 65 Court Street, Buffalo, New York						
Erie	FAC 58-19	City of Buffalo: Kensington Expressway Arterial Highway, Sect. 1 (Maple St. to Landon St.) Project U 377(16)	1.69	Grading & Trunk Sewer = 1.15 Mi. Trunk Sewer = 0.24 Mi. Water Lines = 0.30 Mi.	$170,000 Plans $10	3,081,000
Erie	FAC 58-17	City of Buffalo: Kensington Expressway Outlet Sewer (Swan St. to Hickory St.) Project U 377(15)	1.10	9′ Reinf. Conc. Pipe Sewer = 0.83 Mi. 8′ Reinf. Conc. Pipe Sewer = 0.25 Mi. Misc. Work = 0.02 Mi.	$120,000 Plans $3	2,180,000
Erie (Rte. 422)	FARC 58-133 Project DS 409(2)	Jamison East Elma, S.H. 925	4.93	Asph. Conc. = 4.90 Mi. Misc. Work = 0.03 Mi.	$40,000 Plans $3	734,000
(Niagara (Rte. 31)	FARC 58-108	Niagara Falls Sanborn, S.H. 5305 Sanborn Pekin, S.H. 740 Project DF 1088(2)	6.50	Asph. Conc. = 6.46 Mi. Misc. Work = 0.04 Mi.	$43,000 Plans $2	774,000
DISTRICT No. 6, J. H. Thomas, District Engineer, State Office Building, 30 West Main Street, Hornell, New York						
Steuben (Rte. 225)	FARC 58-123	Caton Corning, S.H. 850 Project DS 734(2)	0.10	Asphalt Concrete	$3,000 Plans $2	52,000
DISTRICT No. 7, R. W. Sweet, District Engineer, 444 Van Duzee Street, Watertown, New York						
Clinton	FISH 58-25	Interstate Route 502, Sect. 7D-2 (Ridge Road to Canadian Border) Project I-1119(12)	2.57 (4.50 Acc.)	Asph. Conc. = 6.99 Mi. Top Crse. Graded Gravel = 0.06 Mi. Misc. Work = 0.02 Mi. 1 Hy. RR Sep. Comp. I Beam 458.5′ 2 Hy. Seps. Comp. I Beam 314.8′ & 214.5′ 1 Br. Comp. I Beam 270′	$250,000 Plans $20	4,563,000
Franklin (Rte. 37)	FARC 58-134	Malone Fort Covington Pt. 1, S.H. 884 Project DF 580(13)	2.25	Asph. Conc. = 2.19 Mi. Misc. Work = 0.06 Mi.	$23,000 Plans $3	413,000
Jefferson (Rte. 177)	FARC 58-129	Adams Center Tremaines Corners, S.H. 835 Tremaines Corners Barnes Corners Worth Corners; S.H. 1751 Project F 864(4)	5.53	Asphalt Concrete Comp. I Beam Br. 84.3′ Reinf. Conc. Open Box Br. 28.3′	$80,000 Plans $10	1,559,000
DISTRICT No. 8, K. G. Rafer, District Engineer, Pleasant Valley Road, Poughkeepsie, New York						
Orange (Rte. 6)	FARC 58-132	Middletown Goshen, S.H. 95 New Jersey State Line Unionville New Hampton Denton, S.H. 500 Project DF 345(4)	0.93	Asphalt Concrete	$22,000 Plans $2	388,000
Orange (Rte 9W)	RC 58-60	West Point Military Reservation Cornwall Pt. 1, S.H. 8500	0.18	Asphalt Concrete	$3,000 Plans $2	51,000
Putnam (Rte. 6)	FARC 58-120	Brewster Carmel, S.H. 909 Project DF 590(5)	1.43	Asphalt Concrete	$15,000 Plans $2	273,000
Putnam (Rte. 6)	FGRC 58-24	Brewster Carmel, S.H. 909 Project DFG 590(3)	0.14	9″ Cem. Conc. Pavt. 24′ Wide R.R. Hy. Sep. Pl. Girder 103.6′	$19,000 Plans $2	349,000
Westchester	FINET 58-3 NET 58-4	Interstate Route 501 (N. Y. State Thruway, New England Section, Subs. 1, 2A, 2, 3, 4 and 5) and New York State Thruway—New England Section Project I 1068(19)	11.31	Lighting System	$55,000 Plans $3	963,000
DISTRICT No. 9, J. C. Frederick, District Engineer, 71 Frederick Street, Binghamton, New York						
Broome	FISH 58-7	Interstate Route 505, Penn. State Line to Five Mile Point Cont. No. 1 (Penn. St. Line to Blakesley Rd.) Project I 1127(5)	3.04 (0.60 Acc.)	Grading & Drainage 6 Hy. Seps. Comp. I Beams 137.4′, 127.1′; 187.5′; 192.3′; 141′ & 141′ 1 Reinf. Conc. Box Br. 20.8′	$165,000 Plans $20	2,819,000
Chenango (Rte. 12)	FAC 58-18	City of Norwich: Arterial Highway (South and North Broad St.) Project U 878(3)	1.02	Asph. Conc. Ty. 2B = 1.01 Mi. Misc. Work = 0.01 Mi.	$40,000 Plans $3	733,000
Sullivan (Rte. 97)	FARC 58-125	Mongaup Pond Eddy, S.H. 1483 Pond Eddy Barryville, S.H. 8352 Project DF 502(16)	6.66	Asphalt Concrete Widen Exist. 46′ Reinf. Conc. Beam Br.	$62,000 Plans $5	1,137,000
DISTRICT No. 10, M. E. Goul, District Engineer, 325 W. Main Street, Babylon, L. I., New York						
Nassau (Rte. 27, 115)	FARC 58-130	Conduit Boulevard Pts. 3, 4, & 5, S.H. 1699A; 1699B; 5701A Wantagh Central Park Pt. 1, S.H. 1798 Project U 947(16)	4.04	½ 9″ Cem. Conc. Pavt. } = 2.93 Mi. ½ Asph. Conc. } 9″ Cem. Conc. Pavt. = 0.09 Mi. Asph. Conc. = 0.50 Mi. Misc. Work = 0.52 Mi.	$195,000 Plans $5	3,547,000

(Continued on the following page)

OFFICIAL PROPOSALS

(Continued from page 122)

Any projects in this letting that are on the Federal Aid highway systems are subject to the provisions of the "Federal-Aid Highway Act of 1956", being Public Law 627, 84th Congress, approved June 29, 1956, and are also subject to the applicable New York State statutes.

In compliance with the provisions of Section 115 (Prevailing Rate of Wage) Public Law 627, the minimum wages to be paid laborers and mechanics are included in wage schedules that are set out in the bid proposal.

Maps, plans, specifications and proposal forms may be seen and obtained at the office of the State Department of Public Works, Bureau of Contracts, Albany, N. Y., and at the office of the District Engineers noted above, and may also be seen at the office of the State Department of Public Works, 270 Broadway, New York City.

The deposit for Plans and Proposal Forms for each contract is indicated above. A refund will be made in full to bidders for return of one set, in good condition, within 30 days of award, or rejection of bids; refund for all other sets in good condition, similar period, will be 50% of deposit.

Special attention of bidders is called to "Information for Bidders" in the Public Works Specifications, and to the special provisions applying to projects financed with federal funds. Award of a contract is subject to priorities and allocations under the Defense Production Act of 1950, as amended, and all regulations issued thereunder.

Proposal for each contract must be submitted in a separate sealed envelope with the name and number of the contract plainly endorsed on the outside of the envelope. Each proposal must be accompanied by draft or certified check payable to the order of the "State of New York, Commissioner of Taxation and Finance" for the sum as specified in the advertisement and the proposal. The retention and disposal of the bidding check, the execution of the contract and bonds shall conform to the provisions of the Highway Laws, as set forth in "Information for Bidders".

The right is reserved to reject any or all bids.

JOHN W. JOHNSON
SUPT. OF PUBLIC WORKS

Bids: September 11, 1958

Benjamin Franklin and Walt Whitman Bridges
Contract No. 102

DELAWARE RIVER PORT AUTHORITY
of the
COMMONWEALTH OF PENNSYLVANIA
and the
STATE OF NEW JERSEY
Administration Building
Camden, New Jersey

Sealed bids will be received for Miscellaneous Paving, and Paving Repairs for the Benjamin Franklin and Walt Whitman Bridges, known at Contract No. 102, at the office of the Executive Director of the Delaware River Port Authority, Administration Building, Benjamin Franklin Bridge Plaza, Camden, New Jersey, until 2:30 P.M., Eastern Daylight Saving Time, Thursday, September 11, 1958, at which place and time they will be publicly opened and read by the Authority.

A more complete description of the work and full information for bidders are given in the Contract Documents and Specifications for this Contract, which may be obtained upon deposit of a $10.00 check, which will be remitted upon receipt of bid or the return in good condition of the copies so taken, within thirty days after the opening of bids.

Each proposal must be accompanied by a certified check in the sum of $10,000 payable to the Delaware River Port Authority and drawn upon a National or State Bank or Trust Company having an office or place of business either in Philadelphia, Pennsylvania or Camden, New Jersey, and must not be enclosed with the sealed bid. The surety's consent must be shown. The bidder to whom the contract is awarded will be required to furnish a Performance and Labor and Materialman's Bond in the sum of 100 percent.

The Authority will afford prospective bidders an opportunity to inspect the site of the Work.

The Authority reserves the right to waive any informalities in the bids received; to reject any or all bids, and to award the Contract only to those experienced in this class of work and to the bidder whose proposal is deemed by the Authority to be most advantageous to the public interest.

DELAWARE RIVER PORT AUTHORITY
JOSEPH K. COSTELLO
EXECUTIVE DIRECTOR

OFFICIAL PROPOSALS

Bids: September 29, 1958.

East Pennsboro Township Authority

Sealed proposals will be received by the East Pennsboro Township Authority, (Attention: A. J. Schick, Secretary), 243 West Columbia Road, Enola, East Pennsboro Township, Cumberland County, Penna., until 8:00 P.M. Eastern Daylight Saving Time, Sept. 29, 1958, at which place and time, or shortly thereafter they will be publicly opened and read. Proposals shall cover furnishing all necessary labor, materials, and equipment, and performing all work for the Contracts noted below. Separate proposals will be received upon the several parts of the project as hereinafter indicated. Each proposal shall be accompanied by a certified check or bid bond in an amount not less than ten (10) percent of the bid total, all in accordance with the provisions contained in the Contract Documents. The proposals may be mailed to the above address of the East Pennsboro Township Authority, or may be delivered to the same address between 7:00 P.M. and 8:00 P.M., E.D.S.T., Sept. 29, 1958. Proposals may also be delivered to the office of Gannett Fleming Corddry and Carpenter, Inc., (Attention: S. I. Zack), 600 North Second Street, Harrisburg, Penna., until 5:00 P.M., E.D.S.T., Sept. 29, 1958.

Copies of the Contract Documents, including Drawings and Specifications, not to exceed two (2) sets of any particular Contract to a prospective bidder, may be obtained only from the office of Gannett Fleming Corddry & Carpenter, Inc., Engineers, 600 North Second Street, Harrisburg, Pennsylvania, upon deposit of the following indicated amounts for each set. Checks presented as deposit for Contract Documents shall be made payable to Gannett Fleming Corddry & Carpenter, Inc.

CONTRACT ONE

CONSTRUCTION OF A SEWERAGE SYSTEM $50.00

(Part A)

Construction of Outfall, Intercepting, and part of Enola Creek Trunk Sewers, with all Tributary Branch Trunk and Lateral Sewers and Force Mains.

(Part B)

Construction of part of Enola Creek Trunk Sewer and Wertzville Trunk Sewer with all Tributary Branch Trunk and Lateral Sewers.

(Part C)

Construction of Lateral Sewers Tributary to existing School Pumping Station on North Enola Drive; all Tributary Trunk, Branch Trunk and Lateral Sewers to existing North Treatment Plant in Summerdale Section; and a part of Enola Creek Trunk Sewer with all Tributary Branch Trunk and Lateral Sewers.

(Parts B and C must be Bid Together)

CONTRACT TWO

GENERAL CONSTRUCTION OF A SEWAGE TREATMENT PLANT, PUMPING STATIONS, FORCE MAINS, AND ALTERATIONS AND ADDITIONS TO EXISTING SEWAGE TREATMENT FACILITIES $35.00

CONTRACT THREE

PLUMBING WORK IN CONNECTION WITH A SEWAGE TREATMENT PROJECT $25.00

CONTRACT FOUR

HEATING WORK IN CONNECTION WITH A SEWAGE TREATMENT PROJECT $25.00

CONTRACT FIVE

ELECTRICAL WORK IN CONNECTION WITH A SEWAGE TREATMENT PROJECT $25.00

Full refund will be made only to actual bidders on the Contracts noted above, for return of one (1) set, no more, of a particular Contract in good condition within fifteen (15) calendar days after closing date for receipt of bids; refund for return of all other sets in good condition within the same period, will be fifty (50) percent of deposit. No refund of deposit will be made for Contract Document returned later than fifteen (15) calendar days after date of receipt of bids.

Copies of the Contract Documents, including Drawings and Specifications, will be on file for inspection purposes at the address of the East Pennsboro Township Authority stated above, at the office of Gannett Fleming Corddry and Carpenter, Inc., at the address stated above, and also at the office of the same firm at 5823 Penn Avenue, Pittsburgh, Penna.

EAST PENNSBORO TOWNSHIP AUTHORITY
Gannett Fleming Corddry and Carpenter, Inc., Engineers.

OFFICIAL PROPOSALS

Bids: December 31, 1958

Power Authority of the State of New York

ADVANCE NOTICE
SALE OF TUNNEL GATES

The Power Authority of the State of New York will advertise for bids and will have plans, specifications, and proposal forms available for issuance to prospective bidders on or about October 1, 1958, for the sale of twenty-eight—16 foot by 19 foot fixed wheel tunnel gates. Bids of prospective purchasers of these gates will be opened on or about December 31, 1958.

The gates to be sold were used for the temporary closure of diversion tunnels during the construction of Long Sault Dam near Massena, New York. These steel gates, weighing approximately 35 tons each, are designed to close openings 16 feet by 19 feet under a maximum head of 80 feet, measured to the gate sill. Each gate has twelve 24 inch diameter wheels and is equipped with continuous "J" rubber sealing strips on the top, bottom and both sides. Each gate can be separated into two sections for shipment by disconnecting a bolted joint located near the transverse center line of the gate. The tunnel gates are being removed as the tunnels are filled with concrete. It is anticipated that the first gate will be removed and available for inspection on or about September 1, 1958 and that removal of the last gate will be completed about December 21, 1958.

Specifications for the sale of the gates will provide for consideration of bids on any number of gates from one to twenty-eight. Lifting beams, steel lifting links, floor plates, and other metal work which is being salvaged from the gate installation will be included as separate bid items in the schedule for the sale of the gates.

Following issuance of the advertisement for bids, plans, specifications, and proposal forms may be obtained from the Power Authority of the State of New York upon application and payment of a fee in an amount to be stated in the advertisement and will be available for inspection by prospective bidders in the Authority's office, 18th Floor, The Coliseum Tower, 10 Columbus Circle, New York 19, New York, in the office of the Engineer, Uhl, Hall & Rich, 230 Congress Street, Boston 10, Massachusetts, and in the offices of the Hydro Electric Power Commission of Ontario, 620 University Avenue, Toronto 2, Ontario.

Prospective bidders on the gates described in this Advance Notice may obtain a set of five drawings of the gates and other metalwork from the field office of the Engineer, Uhl, Hall & Rich, Post Office Box 68, Massena, New York, upon application and payment of $2.00 per set. No information on the provisions for the sale of the gates except that given in this notice will be furnished to prospective bidders in advance of the issuance of the advertisement for bids.

The information contained in this Advance Notice is subject to change without notice. The Advance Notice is not to be considered as constituting a part of any contract for the sales of gates and/or other metalwork.

W. S. Chapin
General Manager

U. S. Government

GOVT. OF DISTRICT OF COLUMBIA, DEPT. OF SANITARY ENGINEERING, D. C., August 22, 1958. SEALED PROPOSALS will be received in Room 404, 499 Pa. Ave., N.W., Wash. 1, D. C., until 2 PM, EDT, September 18, 1958, and then publicly opened and read for Sewage Treatment Plant Additions, Additional Sludge Handling Facilities—Unit 24, consisting of furnishing all labor, materials, and equipment, and performing all work; except as otherwise specified, required for the complete construction and equipping of the Diluting Water Pumping Station, Heat Exchanger Building, Thickening Tanks, New Elutriation Tanks, Piping and Equipment in the existing elutriation tanks, sludge digestion tanks and operating galleries, Preliminary Tank Control Houses, outside piping, electrical modifications and additions, and appurtenant work as specified and shown on the plans. Proposal forms, plans and specifications obtainable from Supervisor, Bid & Contract Section, Procurement Office, D.C., Rm. 404, 499 Pa. Ave. N.W., upon deposit of a certified check for $50.00 per set, payable to D.C. Treasurer. (phone Na 8-6000, Ext. 2378.)

OFFICIAL PROPOSALS

(Continued from preceding page)

Bids: September 18, 1958

Contract O&M-437

THE PORT OF NEW YORK AUTHORITY
PORT AUTHORITY BUS TERMINAL
625-8th Avenue
New York, N. Y.

ELEVATOR MAINTENANCE SERVICE

Sealed proposals for furnishing all labor, material and equipment for Elevator Maintenance Service at the Port Authority Bus Terminal, 625 Eighth Avenue, New York, N. Y. will be received at the office of the Department of Purchase and Administrative Services of The Port of New York Authority, Room 900, 111 Eighth Avenue, New York 11, N. Y. until 11:00 A. M. Thursday, September 18, 1958, at which time and place said proposals will be opened and read.

Contract documents may be at the office of the Department of Purchase and Administrative Services, Room 900, and copies will be furnished upon request.

THE PORT OF NEW YORK AUTHORITY
Donald V. Lowe, Chairman
New York, September 4, 1958

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC. 5101) will be received at McCook, Nebraska until September 30, 1958, for furnishing labor and materials for spillways and wasteways and Siphons No. 1 and No. 9 for Culbertson Canal, Frenchman-Cambridge Division, Nebraska, Missouri River Basin Project. Location west of McCook, Nebraska. Principal items are 73,900 cu. yds. excavation; 3,310 cu. yds. concrete; 4 radial gates; 200 lm ft. 90-inch steel pipe, alternate to monolithic concrete pipe; and other work. Completion time 200 to 550 days. For particulars, address Bureau of Reclamation, P. O. Box 737, McCook, Nebraska; or Building 53, Denver Federal Center, Denver, Colorado. W. A. Dexheimer, Commissioner.

U. S. Government

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Invitation No. DS-5103), SET ASIDE FOR SMALL BUSINESS, will be received at Denver, Colorado, until October 2, 1958, for furnishing four (4) 6-foot by 7-foot 6-inch high-pressure gate valves with hydraulic hoists and accessory equipment for Foss Dam, Washita Basin Project, Oklahoma. Delivery is desired within 180 days. For particulars, address Bureau of Reclamation, Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation. Sealed bids (Specifications No. DC-5100) will be received at Clinton, Oklahoma, until October 1, 1958, for furnishing labor and materials for Foss Dam, Washita Basin Project, Oklahoma. Location near Clinton, Oklahoma, in Custer County. Principal items are 12,231,000 cu. yds. excavation; 10,100,000 cu. yds. dam embankment, Zones 1, 2, and 3; 11,625 cu. yds. concrete; and other work. Completion time 1,100 days. For particulars, address Bureau of Reclamation, P. O. Box 84, Anadarko, Oklahoma; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

DEPARTMENT OF THE INTERIOR, Bureau of Reclamation, Sealed bids (Specifications No. DC-5102) will be received at Albuquerque, New Mexico, until September 17, 1958, for furnishing labor and materials for channelization of the Rio Grande, Albuquerque Area, Unit 2, Middle Rio Grande Project, New Mexico. Location near Albuquerque, New Mexico. Principal items are 510 acres clearing; 82,200 cu. yds. excavating; 4,130 metal jetty units; and other work. Completion time 365 days. For particulars, address Bureau of Reclamation, P. O. Box 252, Albuquerque, New Mexico; or Building 53, Denver Federal Center, Denver 2, Colorado. W. A. Dexheimer, Commissioner.

U. S. Government

Sealed bids for construction of Cafeteria and Service Building, Gallaudet College, Washington, D.C., will be received until 2:00 PM, EDT, September 26, 1958 in Rm. 7128, GSA Regional Office Building, 7th & D Sts., S.W., Washington, D.C., and then publicly opened in Rm. 7128 at the above address. Contractors interested in bidding the complete project may obtain bidding material from Public Buildings Service, Rm. 1304, GSA Bldg., 19th & F Sts., N.W., Washington 25, D.C. Phone: EXecutive 3-4900, Ext. 2397. Commissioner of Public Buildings, General Services Administration.

OFFICIAL PROPOSAL

RATE: $2.40 per line (or fraction) per insertion.

CLOSING DATE: 10:30 a.m. Friday for issue out following Thursday.

SEND COPY: Official Proposal Division, Engineering News-Record, Class. Adv. Div., P.O. Box 12, New York 36, N. Y.

EMPLOYMENT NATIONAL COVERAGE OPPORTUNITIES

DISPLAYED RATE:

The advertising rate is $39.20 per inch for all advertising appearing on other than a contract basis. Frequency rates quoted on request.

An advertising inch is measured 7/8" vertically on a column—3 columns—30 inches to a page.

Subject to Agency Commission.

SEPT. 18th ISSUE CLOSES SEPT. 8th

UNDISPLAYED RATE:

$2.40 per line, minimum 3 lines. To figure advance payment count 5 average words as a line.

Position Wanted ads take ½ of above rate.

Box numbers—count as 1 line.

Discount of 10% if full payment is made in advance for 4 consecutive insertions.

Not subject to Agency Commission.

Send NEW Ads and Inquiries to Classified Advertising Division of ENGINEERING NEWS-RECORD, P. O. Box 12, N. Y. 36.

ADDRESS BOX NO. REPLIES TO: Box No.
Classified Adv. Div. of this publication.
Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• POSITIONS VACANT

Highway Engineers—Highway Engineers with a minimum of 3 years experience. Excellent opportunity with established consulting engineering firm in Middle West. P-7909, Engineering News-Record.

General Superintendent—General Contractor with substantial volume throughout Michigan has opening for experienced young man to take charge of all field operations. State experience and references. P-8555, Engineering News-Record.

Wanted: Construction Superintendents and Erectors for Boilers, Turbine Generators, Condensers and Auxiliary Power Plant Equipment. Applicants must have experience record with an erection contractor in responsible supervisory capacity. P-8631, Engineering News-Record.

• POSITIONS VACANT

Opening for Civil Engineer with Soil Mechanics background. Occasional travel involved. Good opportunity with consulting firm specializing in soil and foundation engineering. Reply giving background and experience. P-8627, Engineering News-Record.

Engineer to expand acceptance, specifications, applications by engineering firms of established waterproofing and corrosion protection specialties. Construction and engineering specifications training necessary; mechanical or chemical engineering background desirable. Considerable travel USA, age 30-45. P-8708, Engineering News-Record.

Engineer-Management. Associate with legal and/or accounting training—development and construction of oil company terminal projects—New York and East Coast areas. P-8716, Engineering News-Record.

Estimator—Experienced for General Contractor engaged in construction of industrial and commercial buildings. Well established firm in Southern Connecticut offering permanent position with good future for properly qualified man. Reply giving complete resume of education, experience, etc. P-8747, Engineering News-Record.

• POSITIONS VACANT

Wanted Registered Architect with 4 or more years experience. Excellent opportunity with established consulting engineering firm in middle west. State education, background and experience. Reply to P-8615, Engineering News-Record.

Wanted Architectural Draftsman with 2 or more years experience. Excellent opportunity with established consulting engineering firm in middle west. State education, background and experience. Reply to P-8590, Engineering News-Record.

(Continued on page 126)

When Answering

BOX NUMBERS

to expedite the handling of your correspondence and avoid confusion, please do not address a single reply to more than one individual box number. Be sure to address separate replies for each advertisement.

ENGINEER NEEDED

Railroad Construction Engineer to supervise Australian railway construction project for about 4 years. Prefer mature man with experience, ability and vigor.

Replies confidential.

P-8774, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

Architectural Engineers

with an intimate knowledge of all phases of commercial and industrial building design. Must have five to ten years experience in building design, site planning, interior layout, checking architects' plans and specifications. Liaison work and field checking.

For out of town project. Furnish resume of experience.

Johnson & Johnson Engineers-Architects, Inc.
111 West Washington St., Chicago 2, Ill.

CIVIL ENGINEERS
HIGHWAY DESIGNERS
STRUCTURAL DESIGNERS
DRAINAGE DESIGNERS
FOR HIGHWAY and BRIDGE WORK
SENIOR and JUNIORS
WORK IN RICHMOND, VA.
Send Resumes to
Blackburn & Blauvelt
3114 West Clay Street Richmond, Va.

To EMPLOYERS Who Advertise for MEN:

Frequently, when there are many applicants for a position, only the most promising letters are acknowledged. The other applicants never know whether their letters reached a prospective employer or not. These men often become discouraged, will not respond to future advertisements and even question their bona fide character.

Every Advertisement Printed in the EMPLOYMENT SECTION Is Duly Authorized.

You can help keep our readers interested and get better returns to your advertising in this section if you acknowledge each reply—in plain envelopes, if you wish.

Classified Advertising Division
McGRAW-HILL PUBLISHING CO., INC.
"Put Yourself in his place."

ENGINEERING DESIGN PERSONNEL

For Work On Highway, Bridge, Water and Sewerage Projects
Openings in Pennsylvania, Ohio & West Virginia

Career opportunities for individuals interested in professional recognition, ample opportunity for advancement based on merit, plus employee retirement plan, group life insurance, hospitalization, paid vacation and holidays.

Mail Resume To F. W. AHERN, Personnel Director

MICHAEL BAKER, JR., INC.
Consulting Engineers
Baker Building Phone SPruce 4-3010 Rochester, Penna.

The Commonwealth of Pennsylvania Seeks

BRIDGE DESIGNERS

with C.E. degree and 1 to 5 years of bridge experience.

Expanding operations offer permanent positions for

• JUNIOR DESIGNERS • DESIGNERS • ASSISTANT SQUAD LEADERS

Salaries from $5500 to $8200 per year.

Plus Liberal Fringe Benefits

Send Complete resume to

PERSONNEL, PA. HWYS. DEPT., HARRISBURG, PA.

ESTIMATORS

General Construction

Industrial, commercial and institutional buildings, schools and hangars. Excellent salaries and working conditions.

Fringe Benefits • Some travel involved.

Permanent position.

Contact Chief Estimator

LURIA CONSTRUCTION CORP.

1745 Eaton Avenue *University 7-4657* Bethlehem, Pa.

ENGINEER FOR GRAIN COMPANY

Engineering Department of large grain company requires graduate engineer for permanent position with some experience in construction and design of grain elevators and knowledge of grain handling equipment. Location is New York City. Submit detailed experience record and list of references to:

P-8729, Engineering News-Record
Class. Adv. Div., P.O. Box 12, N. Y. 36, N. Y.

STRUCTURAL ENGINEER

Structural steel designer and estimator for industrial buildings and miscellaneous steel structures. Applicant should be graduate engineer, preferably 30-40 years old, with minimum of 5 years actual structural steel design experience. Permanent employment, paid vacations, group insurance plan, pension plan. Excellent opportunity. Location Mid-West. Employer is nationally known, well established steel fabricator.

Reply fully, giving resume of experience, education, age and salary requirements to

P-8715, Engineering News-Record
520 N. Michigan Ave., Chicago 11, Ill.

CONSTRUCTION COST ESTIMATOR

The Commonwealth of Pennsylvania offers a permanent position to a construction cost estimator with a Civil Engineering degree and at least one year of experience in highway construction cost estimating. Salary from $6,000 to $7,000, plus liberal fringe benefits. Send complete resume to

PERSONNEL
PA. HWYS. DEPT. HARRISBURG, PA.

CIVIL ENGINEER

Young civil engineer interested in broad application of civil engineering.

Excellent opportunity with consulting firm. Liberal benefit plans and good working conditions. Location Middle West.

Send resume of education and experience with salary requirements to:

P-7577, Engineering News-Record
520 No. Michigan Ave., Chicago 11, Ill.

• POSITIONS VACANT
(Continued from page 124)

Maintenance Superintendent, Palm Springs, California. To supervise Street & building maintenance; 10 years varied experience in street & building maintenance, including supervision. Max. age 50 years; salary range $506-628 per month. Retirement plan; liberal vacation, etc. Apply Personnel, City Hall, Palm Springs.

Wanted—experienced man for working plant superintendent. Manufacturing specification concrete pipe in modern plant located large, rapid growing southwestern city, write giving complete qualifications, salary expected and recent photograph. Reply held strictly confidential. P-8614, Engineering News-Record.

Associate and Assistant Professors for fields of advanced dynamics, advanced strength, and elasticity. Also have opening for graduate student as half-time instructor. Engineering Mechanics Dept., Kansas University, Lawrence, Kansas.

Wanted: Young graduate Engineer, preferably single, interested in overseas assignment with Consulting firm. State education, background and experience. Reply fully to P-8394, Engineering News-Record.

Wanted: Top Flight Salesman-Estimator for aggressive, growing steel fabricator. Must know structural steel and construction business. Opportunity for ambitious man to grow with company. Location Michigan. P-8769, Engineering News-Record.

Wanted: General Building Construction Estimator, experienced in concrete, masonry and building trades. Position with expanding established general contractor in New York-Westchester area. P-8768, Engineering News-Record.

Estimator: General Contractor, location— Allentown, Bethlehem area, Pennsylvania. Must have take-off experience on all types of industrial and commercial buildings. Reply giving name, address, age, education, experience and salary desired. P-8760, Engineering News-Record.

Applications will be received by the Town of Plaquemine, Plaquemine, Louisiana for the following positions: Municipal Engineers—Registered Civil, Electrical, or Mechanical with a minimum of 3 years' experience including municipal utilities work. Reply fully giving personal data, education, experience, and salary requirement to: Town Clerk, City Hall, Plaquemine, Louisiana.

Civil Engineering Professor wanted for fall quarter beginning in September. Must have B.C.E. degree. Prefer experience in teaching or in industry but will consider recent Graduate. Apply to C. T. Holladay, Southern Technical Institute, Chamblee, Ga.

Civil or Arch. Engineering Graduates under 30, aggressive, military completed. For estimating and field engineering. Some background experience desirable. Submit personal resume and recent photograph. Dondlinger & Sons Const. Co., Inc., Box 398, Wichita, Kansas.

Resident Engineer, experienced, registered, on small sewage treatment project, (about $250,000), salary range $500 to $600 per month depending on qualifications, plus reasonable expense allowance. Complete resume of experience and education and statement of salary requirement in letter of application. Location Ohio. P-8785, Engineering News-Record.

• EMPLOYMENT SERVICES

Better Positions—$6,000 to $35,000. Want a substantial salary increase, more opportunity or different location? This national 47 year old service connects you with best openings. You pay us only nominal fee for negotiations: This we refund when employer pays placement fee. Present position protected. In complete confidence, write for particulars. R. W. Bixby, Inc., 559 Brisbane Bldg., Buffalo, N. Y.

Salaried Personnel $5,000-$30,000. This nationwide service successful since 1927 finds openings in your field. Sells your abilities; arranges contacts. Present position protected. Write for details—Jira Thayer Jennings, P. O. Box 674, Manchester, Vermont.

• POSITIONS WANTED

Engineer, Registered & Graduate in Civil, post graduate work in Structural, 8 yrs. experience in Civil, Structural, Architectural, Mechanical, and Electrical design & const. supervision. Partner & Chief Engineer of Arch. & Engin. Firm last 4 yrs. Resume on request. Box 635, Bethany, Okla.

Accountant-Controller, 15 yrs diversified experience in Heavy Construction, previous 4 yrs with CPA firm. PW-8620, Engineering News-Record.

General Superintendent, 46. Broad experience in building construction, presently employed—interested in change. Thoroughly qualified and responsible at management level. PW-8663, Engineering News-Record.

General Manager—Medium size building construction firm. Seeks position leading to participation in ownership. Successful record. Graduate engineer. Middle thirties. PW-8704, Engineering News-Record.

Contractor's Assistant. B.S.C.E.; Registered P.E.; 34, 7 years extensive building construction experience from construction engineer to superintendent. Desire permanent position as estimator and/or Superintendent. Prefer southern California area. PW-8722, Engineering News-Record.

BSCE—seeks foreign assignment—5 yrs. consult. exp. Fluent Spanish; some Greek, Ital. & Port. Proven ability in design & field. Resume on request. PW-8736, Engineering News-Record.

Construction Supt. Civil Engineer, 12 years in supervisory capacity, will relocate. PW-8750, Engineering News-Record.

Landscape Supt. Civil Engineer, interested in golf course and industrial landscaping. PW-8751, Engineering News-Record.

Prestressed and Precast Concrete-Executive, now in Prestressed, with broad experience in top positions in General Contracting, who can plan, build, organize and operate Prestressed Plant, solicits inquiries from those requiring top man to handle large operation. Minimum Salary $20,000. PW-8618, Engineering News-Record.

• POSITIONS WANTED

Project Manager for New or Plant expansion. Can take full charge from concept to occupancy. Engineering background. Desire change. PW-8709, Engineering News-Record.

Teaching Position with a university in U.S.A. or Canada, desired by Professional Civil Engineer, B.Eng., Master of Eng. in Soil Mechanics, thoroughly experienced in Soil Mechanics and Foundation, Highways, Airforce Bases and Bridges. Presently employed as Project Manager. PW-8719, Engineering News-Record.

Construction Engineer: BS, MIT: 24, Married. Terminate active duty US Army Nov., TS clearance, Pilot's License. General construction experience. Seeks responsible position with consultant or medium size construction firm, prefer Southeast. Lt. F. Thellman, 2034 Harmon Rd., Eatontown, N. J.

Superintendent—30 years experience—Pipe lines, water, conduit, sewerage, gas, sanitary and storm. Very capable, dependable. Excellent health. Best references. PW-8781, Engineering News-Record.

Professional Engineer, 26 years experience in design and supervision of bridges, buildings, foundations, and misc. structures, seeks supervisory position. Boston area preferred. PW-8765, Engineering News-Record.

Sewer Grading Paving foreman, 20 years experience available immediately. Will relocate. PW-8764, Engineering News-Record.

Civil Eng. (Construction)—Attorney, Commercial Pilot Instrument Rating, 3 yrs. Corps of Engineers Claims Attorney, 5 yrs. Construction Eng. Desire responsible position with Construction or Eng. Firm, Foreign or Domestic. PW-8752, Engineering News-Record.

BSCE-MIT, PhD Rome Italy, US citizen, experience on both sides Atlantic. Would like to remain in Europe. Write Engineer, Vle XXI Aprile 34, Rome, Italy.

Contractor's Sup't. or Engineer. 17 yrs. grade drain pave. & structures. B.S.C.E. Estimating & management experience. PW-8753, Engineering News-Record.

SEARCHLIGHT SECTION
CLASSIFIED ADVERTISING

BUSINESS OPPORTUNITIES - EQUIPMENT - USED or RESALE

DISPLAYED RATES

The advertising rate is $25.50 per inch for all advertising appearing on other than a contract basis. Contract rates quoted on request.

AN ADVERTISING INCH is measured ⅞ inch vert. on one col., 3 columns—30 in. to a page.

EQUIPMENT WANTED or FOR SALE ADVERTISEMENTS acceptable only in Displayed Style.

UNDISPLAYED RATES

$2.40 a line, min. 3 lines. To figure advance payment count 5 average words as a line.

BOX NUMBERS count as one additional line in undisplayed ads.

DISCOUNT OF 10% if full payment is made in advance for four consecutive insertions of undisplayed ads.

ADDRESS BOX NO. REPLIES TO: Box No. Classified Adv. Div. of this publication. Send to office nearest you.
NEW YORK 36: P. O. BOX 12
CHICAGO 11: 520 N. Michigan Ave.
SAN FRANCISCO 4: 68 Post St.

• SPECIAL SERVICE

Foundation and reinforced concrete design and detailing. Structural engineer registered in Illinois. SS-8738, Engineering News-Record.

• BUSINESS OPPORTUNITIES

Partnership available to man presently producing business in architect-engineering field. No cash needed. Firm located in Minneapolis. BO-8698, Engineering News-Record.

Have Excellent Proposition for small general contractor interested in operating in Florida —Heavy Construction—This is a good sound opportunity. BO-8702, Engineering News-Record.

• FOR RENT

51 Broadway—6,600 square feet, sublease Executive offices and staff areas. Immediate occupancy and attractive terms. Telephone W. S. Brayshaw of occupying firm. BEekman 3-6300 in New York.

Engineers—Foremen—Office Men
Learn latest methods to organize and run work. Prepare for the top jobs.
Send post card for details.
GEO. E. DEATHERAGE & SON
CONSTRUCTION CONSULTANTS
Satsuma, Florida

WANTED
7 to 10 yard Clamshell Rehandling Bucket.
WEEKS STEVEDORING CO.
90 West St. New York 6, N. Y.

STRUCTURAL ENGINEERING
ARCHITECTURAL ENGINEERING
OUR COURSES of instruction by mail HAVE HELPED THOUSANDS to better positions and to pass State Board Examinations. Forty-eighth year.
WILSON Engineering Corp.
College House Offices HARVARD SQ., CAMBRIDGE, MASS.

FOR SALE

650-B Bucyrus Erie Elec. Drag, 195', 16 yd.
15-W Bucyrus Erie Elec. Drag, 215', 13 yd.
631 Page Elec. Dragline, 200', 8 yd.
9-W Bucyrus Erie Elec. Drag, 200', 8 yd.
625 Page Diesel Drag, 150', 10 yd.
723 Page Diesel Drag, 130', 10 yd.
621-S Page Diesel Drag, 125', 7 yd.
200-W Bucyrus Erie Diesel Drag, 125', 6 yd.
7-W Bucyrus Erie Diesel Drag, 180', 5 yd.
5-W Bucyrus Erie Diesel Drag, 120', 6 yd.
2400 Lima Drag, 130', 5 yd.
4500 Manitowoc Drag, 120', 5 yd.
3900 Manitowoc Speedcrane, 100' boom
3500 & 3000 Manitowoc Crawler Cranes
111-M Marion Drag, 100', 4 yd.
1201 Lima Dragline, 85', 3 yd.
1001 Lima Dragline, 85', 2½ yd.
750-B Bucyrus Erie 20 yd. Elec. Shovel
5480 Marion 18 yd. Elec. H. L. Shovel
170-B Bucyrus Erie 6½ yd. Elec. Shovel
120-B Bucyrus Erie 4 yd. Elec. Shovel
1400 P&H 4 yd. Elec. Shovel
44-B Bucyrus Erie 2 yd. Shovel
Unit 1020 ¾ yd. Shovel
Large selection of smaller Shovels and Draglines available
Model T-750 Reich Truck Mounted Rotary and down-the-hole Drill
Lima Model "C" Roadpacker
Euclid Trucks—Models 86FD, 27FD, 5FD, 2FD, 63TD, 36TD, 31TD, 25FDT, 38FDT, 67FDT
Truck Cranes, Dozers, Scrapers, Front End Loaders, Drills, Buckets, Attachments and other misc. equipment available.

FRANK SWABB EQUIPMENT CO., INC.
313 Hazleton Nat'l. Bank Bldg.
Hazleton, Pa. GLadstone 5-3658

TUNNEL CONSTRUCTION EQUIPMENT

2—Headframes—108' and 121' Towers—1000' Shaft Steel—Complete— 500 HP Lambert and 300 HP Vulcan Hoists
1—Ottumwa 100 HP Hoist
320 LF—11'6" Diam. Full Round Telescopic Steel Tunnel Lining Forms
340 LF—10'0" Diam. Full Round Telescopic Steel Tunnel Lining Forms
2—Motorized Form Travelers—For Collapsing and Carrying 20 LF Sections
20—Blaw-Knox 3½ CY Concrete Agitators on 36" Ga Heavy Duty Cars
6—Worthington 4 CY Concrete Agitators on 36" Ga Heavy Duty Cars
2—Blaw-Knox 36" Ga Concrete Bridge Ramps—60# Rail
6—8T 36" Ga G.E. Battery Locomotives
3—10T 36" Ga Goodman Battery Locomotives
2—10T 36" Ga Plymouth Diesel Locomotives
1—6T 36" Ga Plymouth Diesel Locomotive
2—Conway 75 Mucking Machine—36" Ga
1—HL 20 36" Ga Joy Pneumatic Mucking Machine
4—Battery Charges 30-50 KW
3—Ingersoll-Rand Type XLE Compressors 800-1050 CFM
3—Gardner Denver Type WBV—550 CFM
2—Rex Pumpcrete Machines—160 Single—1000' 6" Pipe and Fittings
20—D 35 Ingersoll-Rand Drifters
7—Ingersoll-Rand Stopers—1" Hex
12,000 LF—3/0 3 Conductor 5000 V Shielded Mine Cable
22,000 LF—4/0 3 Conductor 5000 V Shielded Mine Cable
60—5 KVA to 200 KVA Transformers—2400/4160 Y—120/240/480 V
2—12" 100 HP Fairbanks-Morse Vertical Turbine Pumps—220/440 V—800 GPM @ 350' w/350 LF 8" Column
1—12" 150 HP Layne and Bowler Deepwell Turbine Pump—220/440 V—800 GPM @ 500' w/10 LF 10" Column
4—3" 100 HP Ingersoll Rand 3 GT Centrifugal Pumps—220/440 V—500 GPM @ 500'
3—6" 40 HP Gorman Rupp Self Priming Centrifugal Pumps 220/440 V
4—4" 20 HP Gorman Rupp Self Priming Centrifugal Pumps 220/440 V
9—4" 20 HP Rex Self Priming Centrifugal Pumps—Model LE—220/440 V
13—2" 5 HP Rex Self Priming Centrifugal Pumps—Model SE—220/440 V

MORRISON-KNUDSEN-KIEWIT-MANEY
1325 Columbia Road — ANdrew 8-2604
South Boston 27, Massachusetts — ANdrew 8-9209
— Phone —

MODERN EQUIPMENT

5—LeTourneau-Westinghouse "C" Tournamatic Scrapers
8—LeTourneau-Westinghouse "D" Roadsters
1—LeTourneau-Westinghouse "C" Tournadozer
1—Gradall, Mod. 2460 "Self propelled"
6—Gradalls, Mod. 2460 factory carriers

Excellent Condition. No "Junkers"

ARNOLT
P. O. Box 489, Metuchen, N. J.
Tel. Liberty 8-6400

For Sale or Rent

200 TON GUY DERRICK

Complete with accessories, less hoist. Converts to 300 ton gin poles.

FS-8644, Engineering News-Record
1125 W. 6th St., Los Angeles 17, Calif.

FOR SALE or RENT

1—Lorain L-85—Shovel, Crane, Dragline 1956
1—Lorain MC-424 Truck Crane 1954
1—Lorain L-41-J—Crane, Backhoe, Dragline 1955
1—Lorain TL-25-K—Crane, Backhoe, Dragline 1953

S. J. ZIOBRO, INC.
158 Orchard St. East Rutherford, N. J.
GEneva 8-6097

PIPE

SURPLUS NEW and USED FOR SALE

5,000 FT.- 20" USED STEEL PIPE $1.50 Per Ft.

3/16" Wall Thickness—16'8" Lengths, With Male & Female Tapered Ends For Joining Purposes, Suitable For Culverts, Drainage, Stacks, Dredging, Piling, Etc.

ACORN IRON & SUPPLY CO.
915 N. Delaware Avenue — Philadelphia, Pa. — WAlnut 2-7070

Need A "Lift"?

CRANES, INC.

RENTALS

Manitowoc 3900's — Crawlers 3500's
Latest Models
Long Booms and Jibs
TRUCK CRANES

Link Belt and Bay City. Cap. to 35 Tons. Booms to 150 ft. Hoists-Welders-Generators

Maspeth 78, N. Y. ST 4-1776

PIPE

VALVES and FITTINGS
All Sizes in Stock
NEW—USED
GREENPOINT PIPE SUPPLY CORP.
Bogart and Stagg Streets, Brooklyn, N. Y.

Watch—
the *Searchlight Section*
for
Equipment Opportunities

ALBERT
PIPE SUPPLY CO. INC.

PILING • PIPE • CULVERTS • VALVES & FITTINGS

ASBESTOS CEMENT PIPE • ALUMINUM PIPE

103 VARICK AVE., BROOKLYN, N. Y. • HY 7-4900

ASSOCIATED PIPE & FITTING CO.

PILING PIPE SHELLS MANDREL FITTINGS	K & M ASBESTOS CEMENT PIPE	CULVERTS CIRCLE ARCH SECTIONAL

P. O. BOX 67, CEDAR GROVE, N. J. • CE 9-4800

PRICED FOR IMMEDIATE SALE

USED INDUSTRIAL BUILDINGS and OVERHEAD CRANES

BUILDINGS ARE TRUSS TYPE IN GOOD CONDITION, COMPLETELY MATCH MARKED, IMMEDIATE DELIVERY, SUITABLE FOR HEAVY INDUSTRY, MANUFACTURING PLANTS, WAREHOUSES AND FOUNDRIES.

BLDG. 12-13—Excellent condition with 27,956 Sq. Ft. of Floor area, 2 Crane Lines, 2-35 Ton P & H Cranes 58 Ft. c/c rails, and 1-10 Ton P & H Crane 27 Ft. c/c rails.

BLDG. #4—Excellent condition. Ideal for any Industry, 160 Ft. Long, 53 Ft. Wide, 24 Ft. from floor to bottom cord, complete with crane runway.

BLDG. #5—Excellent condition. Ideal for Warehouse or Manufacturing Plant, 397 Ft. Long, 54 Ft. Wide, 1-15 Ton Cleveland Crane available with this Bldg.

CRANES FOR SALE—1-25 Ton Morgan Crane 51 Ft. c/c rails, 1-35 Ton P & H Crane, 58 Ft. c/c rails. All the above cranes were in operation at time of dismantling. For further information and details, please contact—

Delbert L. Smith Co., Inc. **525 Chartiers Ave., McKees Rocks, Pa.**
Phone SPalding 1-2111

FORSYTHE EQUIPMENT CO., INC.

MANITOWOC SPEEDCRANES

RENTALS

Capacities to 70 Tons
Booms to 140 ft. and 30 ft. jibs
Special rates on long rentals

Exeter 2-6125 37-11 Vernon Blvd.
Long Island City 1, New York

ECA SPECIALS

4—600 CFM Chicago Pneumatic Rotary Compressors

2—365 CFM Chicago Pneumatic Rotary Compressors

5—315 CFM Gas. and diesel compressors.

All size compressors available on rental or sale basis.

Complete line of air tools—drills—breakers, etc.

40—Pile Hammers from #0 Vulcan to #1 McKiernan-Terry.

All Size boilers—pile leads in stock.

ECA EQUIPMENT CORPORATION OF AMERICA

CLIFTON HEIGHTS, PA., Box J 608, Sub. of Phila.
GROVETON, PA., Box 43-J Sub. of Pittsb.
CHICAGO 4, ILL., 327J So. La Salle St.
NEW YORK 7, N. Y., 30-J Church St.

FOR SALE OR RENT

40 TON AMERICAN DIESEL LOCO. CRANE
30 TON BROWNING DIESEL LOCO. CRANE
65 TON WHITCOMB DIESEL ELEC. LOCO.
44 TON GEN. ELEC. DIESEL ELEC. LOCO.
25 TON WHITCOMB DIESEL ELEC. LOCO. 1948
50 TON AMER. GUY DERRICK, 115' MAST, 100' BM.
90 HP LIDGERWOOD 2D DIESEL HOIST W/ SWINGER
2½ YD. LINK-BELT K-595 DIESEL CRANE, 120' BM
60 TON MANITOWOC 3900 ERECTION CRANE, 140' BM.
110 HP CLAYTON PORT. STEAM GENERATOR

WHISLER EQUIPMENT CO.
1905 Railway Exchange Bldg., St. Louis 1, Mo.
CHestnut 1-4474

RENTAL and SALE of

PILE HAMMERS & ACCESSORIES

Steam, Gasoline and Diesel Cranes
Steam Generators—Compressors
Pile Extractors

Distributors for Vulcan Iron Works, Inc.

HOWARD W. READ CORP.
4603 N. 4th St., Phila., Pa.
Tel. GLadstone 7-0700

SALE OR RENT

1201 LIMA 3½ yd. Dragline or Clam Shell Late Model
2—10" Moretrench G. M. Diesel Wellpoint Pumps
1—35' Office Trailer
UNITED FOUNDATION CORPORATION
680 Lexington Rd., Union, N. J.
Phone: Murdock 6-4257

"BROOKVILLE" Locomotives

We offer Two (2) Like New, 5 ton, Brookville Locomotives with Diesel engines less than a year old. Date of shipment from factory and serial numbers gladly furnished. These are std. ga. machines and we also have 12, like new flat cars, std. ga.

ARROW CONTRACTORS EQUIP. CO.
4646 S. Kedzie Ave., Chicago 32
Tel.—FRontier 6-6500

SEARCHLIGHT Equipment Spotting Service

This service is aimed at helping you, the reader of "SEARCHLIGHT", to locate Surplus new and used Engineering and Construction equipment *not currently advertised*. (This service is for USER-BUYERS only). No charge or obligation.

How to use: Check the dealer ads to see if what you want is not *currently* advertised. If not, send us the specifications of the equipment wanted on the coupon below, or on your own company letterhead to:

Searchlight Equipment Spotting Service
c/o ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N. Y.

Your requirements will be brought promptly to the attention of the equipment dealers advertising in this section. You will receive replies directly from them.

Searchlight Equipment Spotting Service
c/o ENGINEERING NEWS-RECORD
P. O. Box 12, N. Y. 36, N. Y.

Please help us locate the following equipment components.

.....
.....
.....

NAME .....
TITLE .....
COMPANY .....
STREET .....
CITY 9/11/58

RAILS-TIES

TRACK ACCESSORIES
NEW and RELAYING

RAILROAD Cross and Switch TIES

Promptly from adequate stocks
NEW and USED *(as available)*
GILLIS & COMPANY
134 Breckenridge Lane Louisville 7, Ky.

MODEL 4500 MANITOWOC SPEEDCRANE FOR SALE

Serial #4566, complete with 140' Boom (45' bottom steel, 38' top aluminum, 37' center aluminum), Caterpillar D386 Diesel engine, air controls, full revolving fairlead, 25'9" crawlers, 60" crawler treads, 5 KW Koehler light plant complete with lights, one 20' aluminum boom insert, air windshield wiper; including bucket.

Located in Florida.

Owner: C. B. HOPPE
Box 590, Palm Beach, Fla.
Phone: Temple 2-2479

STEEL FORMS

FOR SALE

Eight 25' sections or 200 lin ft. Complete with rubber tired travelers, in good condition, size 11'6 wide 11'6 high. Can be altered for size at a minimum cost for use forming concrete culverts or tunnels.

CONSOLIDATED CONTRACTORS,
1489 THOMAS ST., MEMPHIS 7, TENN.

CRANES FOR RENT

CRAWLERS — Capacities to 60 tons Booms to 180 ft.
TRUCK CRANES — Capacities to 35 tons Booms to 130 ft.

P and H. Lima and Manitowoc.
Top-Condition erection cranes

ROGER SHERMAN
CRANE SERVICE, INC.
East Hartford, Connecticut JAckson 8-4106

LOW COST INSTALLATION AND OPERATION

CABLEWAYS
IMMEDIATE SHIPMENT
ELECTRIC, STEAM or DIESEL
CAPACITY 3 TO 20 TONS
SELL, RENT or BUY

FOR DAMS, BRIDGES, BREAKWATERS, FILTRATION AND SEWERAGE PLANTS
FOR SPEED, ECONOMY, EFFICIENCY, FLOOD SAFETY, LABOR REDUCTION

AMBURSEN DAM CO. INC.
295 MADISON AVE. NEW YORK

SALE OR RENT

1—15 B Bucyrus-Erie Crane and Backhoe
1—38 B Bucyrus-Erie Crane and Dragline
1—25 Ton Bay City Truck Crane
1—30 Ton Lorain Truck Crane
1—D17,000 Caterpillar Power Unit
1—25 Ton Ohio Diesel Locomotive Crane
1—30 Ton Browning Diesel Locomotive Crane

B. M. WEISS COMPANY
Girard Trust Bldg. Philadelphia 2, Pa.

PILING

SURPLUS NEW and USED — For Sale, Wanted or Rent

REX PUMPCRETE MACHINE for sale

We have an exceptionally fine Rex Pumpcrete Machine with Waukesha Gasoline engine drive, 450 ft. straight pipe, 150 ft. curves. This is the large, 8" double machine.

— also —

Two (2) BROOKVILLE, Locomotives, Diesel engines, std. ga. also 12, flat cars for same.

ARROW CONTRACTORS EQUIP. CO.
4646 S. Kedzie Ave., Chicago 32
Tel.—FRontier 6-6500

STEEL SHEET PILING

AVAILABLE FOR PROMPT SHIPMENT

Pcs.	Section	Length	Location
200	MP-116	50 to 60'	Kansas City
200	MP-115	50 to 60'	Kansas City
150	MP-112	50 to 60'	Chicago
450	MP-116	35 to 60'	Chicago
175	MP-115	50 to 60'	Chicago
180	MP-112	19 to 20'	Nebraska
1300	SP-6a	15 to 47'	New York

CONMACO, INC.
PHONE DRexel 1-3930
804 KANSAS AVE., KANSAS CITY, KANSAS

We do a Nation-wide business in

STEEL SHEET PILING

IMMEDIATE SHIPMENT

815 pcs. 75 to 30 ft. Beth. SP-6a—New York
100 pcs. 62 ft. Beth. ZP-32—Connecticut
322 pcs. 60 to 30 ft. M-115 and M-116—Illinois
258 pcs. 50 ft. ZP-32—Maryland
241 pcs. 48 ft. MZ-27—Louisiana
76 pcs. 30 to 28 ft. M-112—Florida
67 pcs. 30 to 20 ft. M-116—Wyoming

Other Lengths & Sections at Various Locations, Including Storage Yards at CHICAGO & BUFFALO

PILE DRIVING EQUIPMENT

Vulcan and McKiernan-Terry
Steam Pile Hammers and Extractors
Hoists and Boilers

MISSISSIPPI VALLEY EQUIPMENT CO.
1908 Railway Exchange Bldg.
St. Louis 1, Mo. CHestnut 1-4474

SURVEYING INSTRUMENTS

USED • REBUILT • SALE
RENT • REPAIRING

H & STEEL SHEET PILING

3700 PCS. BETH. SP6, A65' 50' 56' & 48' & 40'
264 PCS. MP112—40' & 60'
447 PCS. BETH.—AP3—25 & 30, 40 & 60 FT.
780 PCS. BETH.—DP2—31' 40' 50' & 64'
536 PCS. BETH. ZP32—25' 36' 48' 55' & 62'
1500 PCS. BP14—BP14—55'-60'
112 PCS. 8' 300 PCS. 15' Corrugated

PILING BOUGHT—SOLD—RENTED
STOCKS: N. Y.—BOSTON—BUFFALO
MONTREAL—BALTIMORE—JACKSONVILLE
RICHMOND—VANCOUVER—NEW ORLEANS

DIESEL LOCOMOTIVES
8—Gen. Elec. 80, 65, 45 & 25 ton
1—Whitcomb 65 ton
5—Plymouth, 10, 20 & 35 ton

4—GANTRY WHIRLEY CRANES
25 R-Amer. 75' Gantry 165' Boom
20 R-Amer. 60' Gantry 139' Boom

R. C. STANHOPE, INC.
60 E. 42nd St. N. Y. 17, N. Y.
Telephone Mu 2-3075

TRANSITS AND LEVELS

New or Rebuilt
Sale or Rent

Headquarters for REPAIRS — any make — Factory Service. We will also buy your old instruments or take them in trade.

A complete line of Engineering Instruments and equipment for field or office. Write for catalog NLR 88.

WARREN-KNIGHT CO.
Manufacturers of Transits and Levels
136 No. 12th St., Philadelphia 7, Penna.

STEEL PIPE PILING

We will buy your surplus (any quantity) Steel Pipe Piling, including Monotube or Fluted Piling.

Phone COLLECT—Tom Schierman, PRospect 3-3020
VALLEY STEEL PRODUCTS CO.
124 Sidney St., St. Louis, Mo.

HY DRACHMAN STEEL CORP.

STRUCTURAL STEEL

The Contractors Steel Supply House
52-25 2nd St., Long Island City, N. Y.
RAvenswood 9-1262

STEEL IS OUR BUSINESS

TRANSITS & LEVELS

Various Makes
NEW & REBUILT

Fully equipped modern shops — all makes and models repaired — all work guaranteed — prompt service — complete line field supplies.

INSTRUMENTS RENTED

Midwest Representatives: W. & L. E. Gurley, Distributors—Filotenica Salmoiraghi

NATIONAL BLUE PRINT CO.
Established 1914.
210 S. Canal St. Chicago (6), Ill.

"FASTER FROM FOSTER"

STEEL SHEET PILING

H-Bearing Pile • Pipe Pile • Rail Pile
From our regular stocks

L. B. FOSTER CO.
PITTSBURGH 30 • ATLANTA 8 • NEW YORK 7
CHICAGO 4 • HOUSTON 2 • LOS ANGELES 5

STEEL SHEET PILING

LARSSEN and ROMBAS Sections

STOCKS AVAILABLE IN:
- Linden, New Jersey
- Ft. Lauderdale, Florida
- Houston, Texas

WESTERN SERVICES CORPORATION
601 E. Linden Ave., Linden, N. J.
MArket 4-4000 HUnter 6-4000

In Florida Call: Port Everglades Steel Co. Ft. Lauderdale—JA. 4-6545
In Houston Call: G. Oliver—CA. 4-7234

ALL MAKES

RE-BUILT REPAIRS RENT REAL EXPERTS

BUFF

69 Dey St., New York WOrth 2-2787

When you need
PILING . . . fast

use this section, as many contractors do, as a piling buying directory. It can save you time when you want to know, quickly, where to buy good new or used piling.

STEEL SHEET PILING IN SOUTH
FOR SALE OR RENT

500 pcs. MP 116, MP 115 20' to 60'
800 pcs. Larssen X & II 20', 25', 30', 40'
Stocks Jax, New Orleans, Tampa, Ft. Everglades
E-4 Extractor, 9B3 Hammer.

SEABOARD STEEL CORPORATION
Tel: RIngling 7-0461, 4521 So Tamiami Tr., Sarasota, Florida

PROFESSIONAL SERVICES

NEW ENGLAND

Metcalf & Eddy
ENGINEERS
Investigations Reports Design
Supervision of Construction
and Operation
Management Valuation Laboratory
1300 Statler Building, Boston 16

MIDDLE ATLANTIC

Edwards and Kelcey
Engineers and Consultants
Highways—Structures
Traffic—Parking
Terminal Facilities
3 William St., Newark, New Jersey
Boston New York Baghdad

John Clarkeson
Consulting Engineer
Civil Engineers—Consulting Services
Highways, Airports, Bridges
Surveys, Waterfront Facilities
Room 203, Del & Hudson RR Bldg.
Albany, N. Y.

E. Lionel Pavlo
Consulting Engineer
Design, Supervision, Reports
Bridges, Highways, Expressways
Marine Structures, Public Works
Industrial Construction, Airports
642 Fifth Ave. New York 19, N. Y.

King & Gavaris
CONSULTING ENGINEERS
Bridges, Highways, Tunnels
Waterfront Structures, Reports
Investigations, Foundations
Design & Supervision of Construction
425 Lexington Ave. New York 17, N. Y.

Lawrence S. Waterbury
Consulting Engineer
Bowling Green 9-9298
26 Broadway New York 4

D. B. Steinman
Consulting Engineer
BRIDGES
HIGHWAYS
Design, Construction
Strengthening, Investigations,
Reports, Advisory Service
117 Liberty St., New York 6, N. Y.

ALWAYS READY
Yes, these consultants are always ready to help you with any problem concerning engineered construction. Call on them with the assurance that you will be receiving the finest of professional advice.

Severud-Elstad-Krueger-Associates
Consulting Engineers
Structural Design - Supervision
Reports - Buildings - Airports
Special Structures
415 Lexington Ave., New York 17, N.Y.

Lockwood, Kessler & Barlett, Inc.
Engineers *Surveyors*
Civil Engineering Investigations, Reports and Designs, Supervision of Construction, Cadastral, Geodetic, Topographic & Engineering Surveys, Photogrammetric Engineering and Mapping.
One Aerial Way Syosset, N. Y.

Modjeski and Masters
Consulting Engineers
Bridges and other Structures
Foundations
Highway and Expressways
900 North Sixth St. Harrisburg, Pa.
Philadelphia - Miami - New Orleans

Robert W. Lowry, Inc.
Consulting Engineers
Robert W. Lowry M. M. Lepkaluk
Design, Supervision, Reports, Long Span & Movable Bridges, Expressways, Highways, Airports, Prestress Design, Strengthening, Soil Engineering.
227 Pine St., Harrisburg, Pa.
New York-New Orleans-Detroit-Boston

Pennsylvania Drilling Company
Subsurface Explorations, Grouting.
Industrial Water Supply.
Mineral Prospecting.
Large Diameter Drilled Shafts, Reports
1205 Chartiers Ave. Pittsburgh 20, Pa.

Michael Baker, Jr., Inc.
Consulting Engineers, Civil Engineers, Planners & Surveyors; Airports & Highway Design; Water Works & Sewerage Design & Operation; Aerial Topo Maps; Surveys; Reports & Investigations; Irrigation. Home Off.—Rochester, Pa. Br. Off.: Jackson, Miss.; Harrisburg, Pa.; College Park, Md.

Sprague & Henwood, Inc.
Drilling Services
Foundation Investigations, Soil Testing & Test Borings, Grout Hole Drilling & Pressure Grouting, Diamond Core Drilling.
Main Office
221 W. Olive Street, Scranton, Pa.
Branches:
1009 Western Savings Fund Bldg., Philadelphia, Pa.
11 W. 42nd St., New York, New York
300 Magee Bldg., Pittsburgh, Pa.
575 Linwood Ave., N. E. Atlanta, Ga.
Box 1446—Grand Junction, Colorado
Buchans, Newfoundland

Buchart Engineering Corp.
Consulting Engineers
Highways - Bridges - Sewer Systems
Surveys - Water Works - Dams - Reports
Supervision - Industrial - Municipal Structures
55 S. Richland Ave., York, Pa.
Lancaster, Pa. Washington, D. C.

CHECK
this section whenever you need professional advice.

SOUTH

Dignum and Associates
Consulting Engineers
Civil Electrical
Structural Mechanical
260 Palermo Avenue
Coral Gables 34, Florida

Rader and Associates
Engineers - Architects
Sewage Disposal, Water Works, Ports, Airports, Bridges, Highways, Office and Commercial Buildings, Industrial Plants, Reports, Investigations, Consultations, Aerial Photography, Photogrammetry.
111 N.E. 2nd Avenue, Miami 32, Fla.

MIDDLE WEST

Consoer, Townsend & Associates
Water Supply, Sewerage, Flood Control & Drainage, Bridges, Express Highways, Paving, Power Plants, Appraisals, Reports, Traffic Studies, Airports, Gas & Electric Transmission Lines.
360 East Grand Ave., Chicago 11, Ill.

Roy B. Everson
S.E. Consultant Since 1900
For Purification Systems as applied to Sewage Treatment, Water Works and Swimming Pool Circulating Systems.
A New System for Automatic Control
211 W. Huron St. Chicago 10, Ill.
Phone SUperior 7-3339

Vogt, Ivers, Seaman & Assoc.
Engineers-Architects
Highways — Structures — Expressways
Industrial Bldgs. — Harbor Facilities
Airports — Dams — Docks
Surveys — Reports
34 W. Sixth St., Cincinnati 2, O.
20 N. Wacker Dr., Chicago 6, Ill.

THE CONSULTING ENGINEER
By reason of special training, wide experience and tested ability, coupled with professional integrity, the consulting engineer brings to his client detached engineering and economic advice that rises above local limitations and encompasses the availability of all modern developments in the fields where he practices as an expert.

Toledo Testing Laboratory
Engineers—Chemists
Concrete — Soils — Asphalt
Inspection Research
Tests Development
Foundation Investigation
Borings — Diamond Drilling — Load Tests
Soils Mechanics Laboratory
1810 North 12th St. Toledo 2, Ohio

Photronix, Inc.
offering an integrated process of
AERIAL PHOTOGRAMMETRY
AND
ELECTRONIC COMPUTATION
For Engineers, By Engineers
790 King Ave. Columbus 12, Ohio

FAR WEST

Woodward-Clyde-Sherard & Assoc.
Consulting Civil Engineers
Soil and Foundation Engineering; Earth Dams; Engineering Geology; Highway and Airport Pavement Design
1150 28th Street, Oakland, California
1240 West Bayaud, Denver, Colorado
310, V.F.W. Bldg., Kansas City, Mo.
4815 Dodge Street, Omaha, Nebraska

INSPECTION & TEST

The Haller Testing Labs., Inc.
140 Cedar St., N. Y. 6, N. Y.
Testing and Inspection of Construction Materials for:
Expressways—Airports
Structures—Bridges
Complete Soils Laboratory
Test Borings—Load Tests
Boston, Plainfield, N. J. New Haven

AERIAL SURVEYS

Aerial Map Service Co.
Topographic, Planimetric, Photo Maps for Highways, Mining, Resources, Construction. City Maps, Tax Maps, Photo Geology, Tellurometer Radio Distance Measurements. Triangulation, Electronic Computation.
1016 Madison Ave., Pittsburgh 12, Pa.

American Air Surveys, Inc.
AERIAL TOPOGRAPHIC MAPS & AERIAL PHOTOS FOR
• Highways • Airports • Power & Pipe Lines • Railroads • Mining • All types construction • Stockpile inventories
907 Penn Ave. Pittsburgh 22, Pa.

Clyde E. Williams & Assoc., Inc.
Aerial Photos - Enlargements
Topographic Maps
At large and particular scales to suit various engineering needs, e. g. Airports, City Sewer & Water, Power & Pipe lines, Reservoirs, Subdivisions, Highways, Bridges & Inventories.
312 W. Colfax Ave. South Bend, Ind.

CONSULT THESE SPECIALISTS . . .

when you need professional assistance in solving difficult problems. Their specialized knowledge and broad experience can prove invaluable in saving both time and money for you.

Engineering News-Record invites other consultants to list the special services they offer on these pages. Rates for the Professional Services section are:

	PER WEEK		
	13 times	26 times	52 times
¾"—	$14.35	$13.35	$12.45
1½"—	$23.85	$22.30	$21.00

ADVERTISERS IN THIS ISSUE

Acker Drill Co., Inc. 97
Aetna Life Affiliated Co. 49
Wm. Ainsworth & Sons, Inc. 96
Allis Chalmers Mfg. Co., Tractor Div....40-41
Allison Div., GMC 86-87
American Bridge Div. U.S.S. 52-53
American Fore Loyalty Group 77
Armco Drainage & Metal Prod., Inc....118-119

Barber Greene Co. 14
Bethlehem Steel Co. 35
Bucyrus Erie Co. 29
A. M. Byers Company..... 56

Cleveland Trencher Co. 32
Colorado Fuel & Iron Corp. Wickwire Div. .....3rd Cover

D-A Lubricant Company, Inc. 4
F. W. Dodge Corp. 84
Dravo Corp. 55
Richard Dudgeon, Inc. 91

Eastman Kodak Co. 37

Firestone Tire & Rubber Co. 51

General Motors Corp. Truck & Coach..... 76
General Textile Mills, Inc..... 8
Goodyear Tire & Rubber, Inc. 5
Griffin Wellpoint Corp. 92
C. L. Guild Construction Co., Inc..... 104
Gulf Oil Corp. 65-68
Gunite Concrete and Construction Co..... 90

Ingalls Iron Works .....2nd Cover
International Harvester Co. (Constr.).....7-12
Ironite Company 73
Irving Subway Grating Co. 57

C. S. Johnson Co. 17

Kaul Clay Mfg. Co., Inc..... 15
Kern Instrument Co. 50
Kerrigan Iron Works, Inc. 112-113
Koehring Co. 16

Leschen Wire Rope Div. H. K. Porter Co., Inc. 54
LeTourneau Westinghouse Co. 98-99; 101
Lima Works, Construction Equip. Div. Baldwin-Lima-Hamilton Corp. 91
Lincoln Electric Co. 45
Lone Star Cement Corp. 22

Manitowoc Shipbuilding, Inc. 62
Mayo Tunnel & Mine Equipment..... 92
McKiernan Terry Corp. 85
McKinney Drilling Co. 90
W. R. Meadow, Inc. 69
Miller Electric Mfg. Co., Inc. 90
Moretrench Corp. 131
Morris Machine Works 60
Morse-Starrett Prod. Co. 131
Murphy Diesel Company 1

Nassau Trailer & Motor Sales..... 93
National Clay Pipe Manufacturers, Inc..... 72
National Tube Div., U.S. Steel Corp. 102-103
Northwest Engineering Co. 3

D. W. Onan & Sons, Inc. 64
Owen Bucket Company 106

Penn-Dixie Cement Co. 18
Phoenix Bridge Corp. 91
Pittsburgh Steel Prod. Co. 94-95
Plan Hold Corporation 96
Polis Manufacturing Co. 13
Portland Cement Association 38
H. K. Porter, Inc. 34

Reda Pump Company 93
Republic Steel Corporation 46-47
Rockwell-Standard Corp., Grating Div.... 97
John. A. Roebling's Sons Corp..... 63
Joseph T. Ryerson & Sons, Inc..... 20

Sachse Electric 93
Sanford-Day Iron Works 31
Schramm, Inc. 81
Sonoco Products Co. 82; 83
Standard Dry Wall Products 74
Superior Concrete Accessories, Inc..... 80
Symons Clamp & Mfg. Co..... 2

Texas Co. 58-59
E. A. Thompson, Inc. 36
Timken Roller Bearing Co. .....4th Cover
Turner Halsey Co. 75

U. S. Steel Corp. 70-71
U.S.S. Universal Atlas Cement Co..... 6

Westinghouse Electric Corp. Apparatus....78-79
R. D. Wood Co. 116
Worthington Corp. 108-109

Professional Services 130

CLASSIFIED ADVERTISING

F. J. Eberle, Business Mgr.

Employment Opportunities 124-126
Notices
Proposals 121-124
Equipment
(Used or Surplus)
(For Rent, Sales Wanted).....126-129

ENGINEERING NEWS-RECORD

330 West 42 St., New York 36—LOngacre 4-3000

ABP Member ABC

Number of copies of this issue printed 83,204

D. S. ROBERTSON, Advertising Sales Manager
D. J. CASSIDY, Business Manager

ADVERTISING REPRESENTATIVES

Atlanta, 3—Rhodes-Haverty Bldg.,
D. C. Billian

Chicago, 11—520 No. Michigan Ave.,
L. H. Hunt, W. G. Payne
J. A. Shipley

Cleveland, 13—1164 Illuminating Bldg.,
55 Public Square
F. P. DiToro

Dallas, 1—Vaughn Bldg., 1712 Commerce St.,
Gordon L. Jones

Denver, 2—1740 Broadway
J. W. Patten

Detroit, 28—Penobscot Bldg.,
D. L. Kates, R. I. Mace

Los Angeles, 17—1125 W. Sixth St.,
Knox Bourne, S. S. Tiebout

New York, 2—500 5th Ave.,
C. D. Neulen, H. T. Olsen
J. C. White

Philadelphia, 3—Six Penn Center Plaza
D. G. Jensen

Pittsburgh, 22—1111 Oliver Bldg.,
M. Russell

St. Louis, 8—Continental Bldg.,
E. B. Mingle, Jr.

San Francisco, 4—68 Post St.,
J. W. Otterson, R. C. Alcorn

OTHER SALES OFFICES:

Boston, 16—350 Park Square Bldg.,
Great Britain—E. E. Schirmer, McGraw-Hill House, 95 Farringdon St., London, E. C. 4
Europe—Michael R. Zeynel, 15, Landgraf-Wilhelm, Frankfurt/Main, Germany

DIG
in the
DRY
with a
MORETRENCH
WELLPOINT SYSTEM

MORETRENCH CORPORATION
World's Oldest . . . Largest . . .
Most Experienced
Predrainage Organization
Send for Catalog
90 West St., New York 6, N. Y.
Chicago, Ill. • Tampa, Fla. • Houston, Tex.
Rockaway, N. J.

THE
Morse-Starrett
WIRE
ROPE
CUTTER

CUTTING CAPACITIES UP TO 1 INCH 1-1/16 INCH, AND 1-1/2 INCH.

FAST
Especially designed cutting blade and dies of the finest steel assure fast cutting action.

EASY
Anyone can operate it. The hammer principle eliminates any special skill requirements.

SAFE
The enclosed cutting blade locked in the body of the cutter assures perfect safety.

PORTABLE
Models for tool kit or stationary operation. Made in three sizes.

SEE YOUR DEALER OR WRITE TO
MORSE-STARRETT PRODUCTS CO.
1204-49th AVENUE • OAKLAND 1, CALIF.

EDITORIAL

Engineering Is the Word

THE BRIGHT NEW WORLD of the future, in which everyone is to be sophisticated in all things scientific, is being quite unscientifically described when it is referred to as a world of "science and technology." The meaning of the two words is so nearly the same as to make the phrase redundant, and neither word by itself provides the complete description intended. Being incomplete, the phrase should be inadmissible.

The proper terminology is "science and engineering," since science provides the knowledge and engineering furnishes the art by means of which the knowledge is made useful.

Technology is only the body of theory or set of scientific doctrines of an art, and is, therefore, merely knowledge in organized form. It takes engineering to put both science and technology to work. Engineering is the word to use with science.

Goal: Sheet-Metal Framing

STRUCTURAL ENGINEERS have dreamed for a long time of the possibility of using light-gage metal for framing major structures. A milestone in this direction was passed a few years ago when a design specification was developed by the American Iron and Steel Institute. But still no major applications of light-gage materials have been made. Now, hopes are being raised by an experimental bridge project that employs "aircraft design principles." It's sponsored by several companies in the aluminum manufacturing and fabricating field and the Bureau of Public Roads.

Light-gage metal construction is attractive because it makes possible more efficient use of material. The metal sheet can be concentrated where it is most effective. Furthermore, it may serve several purposes, such as top flange and concrete form for the deck. However, the thin metal must be adequately braced against buckling and torsion, and this bracing can raise fabrication costs so high as to make a light-gage design uneconomical.

By making use of experience gained with aircraft, sponsors of the new light-gage aluminum bridge hope to overcome this handicap. A full-scale bridge section of the new design has been undergoing tests successfully at Lehigh University (see page 25). Metal ⅛ in. thick and less was shaped into a series of triangular beams, designed to act with the concrete deck in supporting live loads. The metal portion weighs only about 9½ psf for the 50 ft span tested. However, the thin metal is stiffened with extrusions at close intervals, requiring hundreds of shop rivets.

A similar sheet-metal design could not be used for ordinary carbon steel because of minimum-thickness requirements in current specifications. These are intended principally to reduce danger from loss of section due to corrosion. Proponents of aluminum claim that it can be used in sheet form because of its corrosion resistance, even without painting.

The triangular-beam bridge appears to suffer from the same handicap that has plagued sheet-metal construction in the past—too high a percentage of fabrication required for stiffening and bracing. The sponsors of the experimental project believe, nevertheless, that mass-production techniques can be applied to keep costs in a competitive range. In the past, lack of standardization of bridges—skews, curves and span variations—has prevented mass production. Whether conditions have changed and whether this design is sufficiently flexible to adapt to a variety of conditions remain to be seen.

There also are some questions that current load tests leave unanswered: Is there danger of brittle failure at low temperatures? What is the possibility of corrosion due to contact with the concrete deck? Since the metal is heat-treated, would damage from a small, hot fire be fatal?

In any event, application of aircraft design principles to framing of bridges and buildings is appealing. If the breakthrough does not come with this design, it cannot be far away. We have learned a great deal about design and fabrication of light-gage structures in the last 20 years. The prospective savings make an economic light-gage design worth striving for.

High-Strength Steel OK

THE WELD DEFECTS discovered in some of the high-strength steel members of the Carquinez Bridge during erection are believed to have resulted from a failure to follow proper shop welding procedure (see page 42). This is fortunate, for such defects can be avoided; if the trouble had centered in the steels, a serious setback to structural progress might have occurred.

The Carquinez Bridge, marking the first large-scale use of these relatively new steels in bridge building, is, of course, a milestone. Previously the steels had been used successfully in shovel dipper-sticks, penstocks, pressure vessels and ore bridges. But to use them in a great highway bridge was something else again.

Credit goes to the California Division of Highways for first satisfying itself by research that the steels were satisfactory, and then for designing in them with confidence. It is gratifying to learn that despite the troubles at Carquinez, the California authorities plan further use of high-strength steels in the future.

Two conclusions would seem justified from the Carquinez experience. One is that high-strength steels can be extremely useful in large and complex structures. The other is that they must be used with care and judgment lest, like a fine watch, some part of the mechanism—or in this case fabrication and assembly procedure—not function properly.

This 240,000-pound steam drum, built by Combustion Engineering for a large generating plant, is here being hoisted 120 feet into position by strong wire rope. It's a striking example of how . . .

safety rides on quality wire rope

You may never hoist loads as large as this 120-ton drum. But *safe, top quality wire rope is just as important to your own operations.* For, although the price of a "bargain" rope would be less, failure of such a rope could cost you thousands of dollars in wrecked equipment. Don't be a victim of false economy. Buy a wire rope that's a quality rope—buy Wickwire Rope.

5339

WICKWIRE ROPE — A CF&I PRODUCT

CF&I

LOOK FOR THE **YELLOW** *TRIANGLE*

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

THE COLORADO FUEL AND IRON CORPORATION—Albuquerque • Amarillo • Billings • Boise • Butte • Casper • Denver • El Paso Farmington (N. M.) • Fort Worth • Houston • Kansas City • Lincoln (Neb.) • Odessa (Tex.) • Oklahoma City • Phoenix • Pueblo Salt Lake City • Tulsa • Wichita • **PACIFIC COAST DIVISION**—Los Angeles • Oakland • Portland • San Francisco • San Leandro Seattle • Spokane • **WICKWIRE SPENCER STEEL DIVISION**—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) New Orleans • New York • Philadelphia

A smart hunter knows this sign means deer...

A smart bearing buyer knows this sign means value...

TIMKEN®

SMART bearing buyers know the trade-mark "Timken" on a product means they get the greatest value for their money. It's a registered trade-mark identifying tapered roller bearings, fine alloy steel bars, seamless steel tubing and removable rock bits, products that are made by The Timken Roller Bearing Company.

And the name "Timken" stands for highest quality. Quality that industry knows and wants. Quality with a backing of 59 years' experience, safeguarded at every step from melt of steel to finished product.

It will pay you to remember that "Timken" is a trade-mark, not just a type of product. If you're looking for the best, look for the trade-mark "Timken". It's your assurance of getting the highest value. The Timken Roller Bearing Company, Canton 6, Ohio. Canadian plant: St. Thomas, Ontario. Cable address: "TIMROSCO".

TAPERED ROLLER BEARINGS • REMOVABLE ROCK BITS • FINE ALLOY STEEL